

# THE VULNERABILITY OF PUBLIC EXPENDITURES

## A CROSS-SECTIONAL ANALYSIS

A Thesis Submitted to the Department of Economics and the  
Institute of Economics and Social Sciences of Bilkent University  
In Partial Fulfillment of the Requirements for the Degree of

MASTER OF ARTS IN ECONOMICS

by

Seçil Özgür

August, 1997

HJ  
2005  
.094  
1997

# **THE VULNERABILITY OF PUBLIC EXPENDITURES**

**A CROSS-SECTIONAL ANALYSIS**

**A Thesis Submitted to the Department of Economics and the  
Institute of Economics and Social Sciences of Bilkent University  
In Partial Fulfillment of the Requirements for the Degree of**

**MASTER OF ARTS IN ECONOMICS**

*Seçil Özgür.*

*Seçil Özgür.*

by

**Seçil Özgür**

**August, 1997**

Hj  
2005  
.094  
1997

BC38395

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Nader Habibi

Assist. Prof. Nader Habibi

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Izak Atiyas

Assist. Prof. Izak Atiyas

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Hakan Berument

Assist. Prof. Hakan Berument

Approved by the Institute of Economics and Social Sciences.

Director:

A. S. Karim

## **ABSTRACT**

### **THE VULNERABILITY OF PUBLIC EXPENDITURES**

#### **A CROSS-SECTIONAL ANALYSIS**

Seçil Özgür

M.A. in Economics

Supervisor: Asst. Prof. Nader Habibi

91 pages

August, 1997

This thesis investigates the relation between the vulnerability of various expenditure categories and political environment of a country during a fiscal adjustment program. In this study, OLS is used at analyzing cross country data. Dependent variables are the vulnerabilities of 14 different expenditure categories. In order to explain the dependent variables, 22 independent variables are used, which capture political, social and economic indicators of countries. Six of them are common to all sectors and they allow us to test the hypotheses related to vulnerability of public expenditures and political conditions of a country. These variables are indicator of political liberty, index of political stability, economic ideology of the ruling elite, the relative size of central government, military relations with neighbors and percentage decline in total budget. As a result, all these six variables are statistically important factors at determining the vulnerability of expenditure sectors.

**KEYWORDS:** Public Expenditures, Fiscal Adjustment Programs, Budget Cuts,

Vulnerability of Expenditures, Cross-Sectional Analysis,

Economic Ideology, Political Stability and Political Liberty.

## ÖZET

### KAMU HARCAMALARININ KISITLANABİLİRLİĞİ

#### BİR ZAMAN KESİTİ ANALİZİ

Seçil Özgür

Yüksek Lisans Tezi, İktisat Bölümü

Tez Yöneticisi: Y. Doç. Dr. Nader Habibi

91 Sayfa

Ağustos, 1997

Bu tez, mali ayarlama programı sırasında, çeşitli harcama kategorilerinin kısıtlanabilirliği ile o ülkenin politik düzeni arasındaki ilişkiyi araştırır. Bu çalışmada, çeşitli ülke verilerini analiz etmek için OLS metodu kullanılmıştır. Bağımlı değişkenler, 14 farklı harcama sektörünün kısıtlanabilirliğidir. Bu bağımlı değişkenleri açıklayabilmek için, ülkelerin politik, sosyal ve ekonomik göstergelerini içeren 22 bağımsız değişken kullanılmıştır. Bunlardan altı tanesi, bütün sektörlerde ortaktır ve bize kamu harcamalarının kısıtlanabilirliği ile o ülkenin politik şartları arasındaki ilişki ile ilgili olan hipotezleri test etmemizi sağlar. Bu değişkenler: politik özgürlüğün göstergesi, politik istikrar endeksi, yöneten tabakanın ekonomik ideolojisi, merkezi hükümetin göreceli büyüklüğü, komşu ülkelerle askeri ilişkiler ve toplam bütçenin kesinti yüzdesi. Sonuç olarak, 6 değişkenin tümü harcama sektörlerindeki kısıntılara karar verilmesinde önemli faktörlerdir.

ANAHTAR KELİMELER: Kamu Harcamaları, Mali Ayarlama Programları, Kısıtlanabilirlik veya Bütçe Kesintileri, Zaman Kesiti Analizi, Ekonomik İdeoloji, Politik İstikrar ve Politik Özgürlük .

## **ACKNOWLEDGMENTS**

I would like to express my gratitude to Asst. Prof. Nader Habibi for his supervision and guidance throughout the development of this thesis. I would like to thank Asst. Prof. Izak Atiyas and Asst. Prof. Hakan Berüment for their valuable comments and suggestions which contributed to the improvement of this thesis.

I would like to thank my family for their patience and for their aids. I especially would like to thank my brother, Mehmet Özgür for his helps and encouragements at the times when I needed.

## **Contents**

<b>1. Introduction</b>	<b>1</b>
<b>2. Literature Survey</b>	<b>4</b>
<b>3. Theory and Application</b>	<b>8</b>
3.1. Hypothesis	9
3.2. Theory	9
3.3. Statistical Methods and Data Description	14
3.4. Statistical Analysis	19
3.4.1. Descriptive Statistics	19
3.4.2. Regression Analysis	21
<b>4. Conclusion</b>	<b>44</b>
<b>5. Appendices</b>	<b>47</b>
5.1. Appendix A	47
5.2. Appendix B	71
<b>References</b>	<b>86</b>



# 1. INTRODUCTION

Fiscal adjustment programs are applied in various countries for decreasing expenditures. They are applied according to the characteristics of various countries. It is a difficult task to determine the size of budget cut and to determine how much will be cut from different expenditure categories. In this study that relation will be explored. The purpose of this study is to investigate how political, economic and social conditions of a country affect the vulnerability of various expenditure categories during such a fiscal adjustment program.

Government expenditure includes all nonrepayable payments by government, whether required or unrequired and whether for current or capital purposes. Several of the distinctions within expenditure are of special significance to overall measures of governmental economic activity. The classification of expenditure follows two main lines:

- the economic effect of the expenditure upon the community,
- the purpose or function for which the expenditure is made.

In the IMF classification of government expenditure by function, expenditures are classified into fourteen major categories. This classification focuses on the purpose for which the expenditures were made, irrespective of the government agency through which they were made.

Public expenditures are tools of state intervention in order to compensate the failure of free market economies and to provide a fair income distribution. Public expenditures are related to microeconomy, but they have macroeconomic results. Thus, they are used as a mean of macroeconomic policy. Public expenditures are used to achieve certain goals such as high growth, low unemployment and(or) low inflation rates. Financial programs are very

widely used economic tool to achieve certain economic targets. This kind of programs are a set of coordinated policy measures, mainly monetary and fiscal and balance of payments fields. Public expenditure is a major part of the fiscal field of such a program. Restrictions on public expenditure are consistent with decreasing the inflation rate (assuming accompaniment with monetary policy). If these restrictions are on government consumption expenditures, rather than government investment expenditures, then domestic savings will increase and, as a result, growth rate will increase. As it can be easily seen, public expenditures affect the macroeconomic performance of countries. The composition of public expenditure is a very strong mean for politicians to achieve certain goals. Some budget categories may be increased, whereas some other budget categories may be decreased. In previous studies, it is shown that budget cutting policies change from country to country. Hicks and Kubic (1984) and Hicks (1991) have shown that in most countries these policies are selective. Some budget categories were cut more than others in relative terms. In other words, some sectors were more 'vulnerable' than others. In this study, I will attempt to identify the political, economic and social determinants of the vulnerability of each expenditure category during budget cuts. The main question that I will attempt to answer is: Is there any empirical relation between political institutions of a country and the vulnerability of functional expenditure categories, when there is a budget reduction in real terms?

Identifying such a relation may help predict the consequences of a fiscal program depending on the political, economic and social conditions under which it will be implemented. It is also important to predict the macroeconomic consequences of adjustment programs for foreign investors. International agencies such as IMF or the World Bank can

also use the findings of this study. For example, they can design financial adjustment programs, that can be applied easily and within a relatively short period of time.

In Section 2, there will be a literature review on explaining the vulnerability of expenditure cuts. In Section 3, the data and the model will be discussed. Also there will be comments on results. And in Section 4, conclusion and some further comments will take place.

## 2. LITERATURE SURVEY

There are not many empirical studies on vulnerability of government expenditure categories. However, there are some studies on public expenditure, which are closely related to the vulnerability problem.

In most studies, the internal allocation of budget deficit and the annual changes of this allocation are analyzed. Katz and Rosenberg (1989) asserted that the annual changes in budgetary allocation of different expenditures reflects the relative power of pressure groups. In response to the non-observability of rent-seeking activities, they have proposed and applied an indirect measure of rent dissipation, based on changes in government budgetary allocations. Their measure is based on the supposition that any change in budgetary allocation is the consequence of rent-seeking activities. Using their measure, they rank 20 countries according to the social costs of rent-seeking.

Schnytzer (1994) has objections to the study done by Katz and Rosenberg. In his critical paper, he points out that the Katz-Rosenberg method can be applied to measure rent-seeking either in one country or a number of countries with similar political systems but its use in cross-country comparison is subject to severe reservations. Political structures of different countries affect political discretion in allocating government expenditures. Indeed, the effects of pressure groups differ in democratic and nondemocratic regimes. Even the public choice theories, such as *Median Voter Theorem* and *Logrolling Theorem*, are not valid in semidemocratic and nondemocratic societies. The political objective functions of policy makers are different under different regime types. At one extreme, under democratic regimes the policy maker is a vote maximizer, whereas at the other extreme, under

nondemocratic regimes, the policy maker is a power maximizer. These different objective functions affect the allocation of public expenditures.

Another study related to international comparison of government expenditure is done by Heller and Diamond (1990) for developing countries. In this study, linear regression models are developed to explain cross-country differences in the ratio of various categories of government expenditure to GDP. Explaining the share in GDP of functional expenditure categories is a difficult task. In this study, a change in expenditure priorities and in the underlying structural equations are tested. As a positive analysis of what has happened to expenditure over the period 1975-1986 and of the change in the relative importance of the key explanatory variables and the overall robustness of the estimating equations for government expenditures, this paper provides some interesting results. In these regressions no political variables are used. Independent variables are GNP per capita, population distribution over some age groups, infant mortality rate, share of labor force in agriculture, share of labor force in industry, share of population in urban areas, population growth rates in urban areas, share of manufacturing output in GDP, share of agriculture in GDP, foreign debt as percentage of GDP and share of total nonadministrative government expenditure in GDP. In this study only economic, social and demographic determinants are tested but no political variables are tested.

In recent years, new research has focused on the interrelationship between domestic politics and economic performance in developing countries and also in some developed countries. There are two such papers, which also influenced taking political variables into consideration. Pastor and Hilt (1993) showed that economic variables, such as investment function, are a function of two debt measures and several political variables, including

measures of democracy, worker power, and risk. The democracy measure is positively signed and significant. The other paper is also an interesting study. Crain and Oakley (1995) investigates political institutions and processes underlying the decisions for public infrastructure spending. They applied the framework of strategic models of fiscal policy and develop an empirical model to analyze the substantial differences in public capital across American states. The results suggest that political conditions such as legislative stability and voter volatility, as well as institutions such as term limits, citizen initiative, and budgeting procedures, are systematically related to infrastructure differences across states. In other words, models of strategic fiscal policy predict a bias toward public capital projects in the absence of durability-enhancing institutions and stable political regimes.

Sivard (1996) investigated world military and social expenditures (health and education) for the year 1996 in a cross sectional framework. This study is descriptive. As a result of this work, a table is constructed showing the ranking of 160 countries based on military and social indicators. In this work, there is no regression analysis or any statistical test. It only shows the different priorities of various countries.

After this point, the papers directly related to this thesis will be described. The following two papers provided a starting point for this thesis:

First, Habibi (1994) studied the statistical correlation of political liberty with size and internal allocation of public budget (central government). A sample of 67 nations is used to study the statistical correlation. Only health and social security are positively related to the level of political liberty and defense is negatively related to the level of political liberty. Social expenditures are also positively associated.

Second, Fardmanesh and Habibi (1997) showed that expenditure vulnerabilities are sensitive to political and institutional conditions. Instead of separate functional expenditure categories, they grouped similar expenditure categories into five main groups of expenditures. The main sectors were: social, productive, infrastructure, administrative and miscellaneous.

As a result of this study, it is observed that higher levels of democracy are associated with more vulnerability of all sectors other than the social sector. Political instability reduced the vulnerability of social, administrative and miscellaneous sectors, whereas it increased the vulnerability of the productive sector. The ideology of the ruling elite was also tested and found to be significant. A ruling party at the right wing of the political spectrum cuts the social sector budget more and a ruling party at the left wing of the political spectrum cuts the productive sector budget more. The relative size of local government is also important for infrastructure, administrative, and miscellaneous sectors.

### **3. THEORY AND APPLICATION**

In this study, differing from Fardmanesh and Habibi (1997), 14 subsectors will be analyzed . The main sectors and their subsectors<sup>1</sup> are:

#### **1. Social Sector:**

- Education
- Health
- Social Security and Welfare
- Housing and Community Amenities
- Other Community and Social Services

#### **2. Productive Sector:**

- Agriculture and Forestry
- Mining, Materials and Manufacturing

#### **3. Infrastructure Sector:**

- Fuel and Energy
- Transportation and Communication

#### **4. Administrative Sector:**

- General Public Services
- Defense
- Public Order and Safety

#### **5. Miscellaneous Sector:**

- Other Economic Affairs
- Other Expenditures

---

<sup>1</sup>These are the same sectors used in Government Finance Statistics Yearbook (IMF - 1997) .



### 3.1. Hypothesis :

In this study, the following hypothesis related to functional categories of expenditures will be tested:

1. In fiscal adjustment periods, social expenditures<sup>2</sup> are less vulnerable in more democratic societies.
2. In fiscal adjustment periods, social expenditures are less vulnerable in unstable countries.
3. Infrastructure expenditures<sup>3</sup> are more protected under stable and undemocratic regime types.
4. The restrictions on expenditures in periods of fiscal adjustment depend on Political Culture.

### 3.2. Theory:

In this part, a hypothetical model will be developed. This model is a public choice model. The ruling elite of a country (prime minister, cabinet, legislature) has a political objective function consisting of functional public expenditures. This ruling elite is responsible for all stages of the budget process and their political utility functions depend also upon the budget process of the allocation of resources among various spending ministries. The budget process in this model is assumed as follows: First, the total government budget ( $G$ ) is decided based on estimated government revenues, government borrowing conditions and macroeconomic targets. Second, the optimal internal allocation is decided between various government expenditures ( $G_i$ ).  $\sum G_i = G$ .

---

<sup>2</sup> Social Sector, as explained in the previous page. (Including all subsectors).

<sup>3</sup> Including all subsectors.

The utility function of the ruling elite has two components, which includes both selfish and benevolent objectives.

$$\ln W = \alpha \ln(W_r) + \beta \ln(W_a) \quad (1)$$

where  $W_r = W_r(G_1, G_2, \dots, G_i, \dots)$  and

$$W_a = W_a(G_1, G_2, \dots, G_i, \dots) \quad i=1,2,3,\dots,n.$$

$W_r$  shows the political rent-seeking behavior of the ruling elite. In other words, this component captures the political benefits which the ruling class could obtain for itself by using various expenditure categories. Populist policies are establishing good examples for such politics. Giving high minimum price for some agricultural outputs such as wheat, sugar, etc. transfers resources to the urban population for the sake of gaining political support in the nearest election.

$W_a$  shows the altruistic component of the ruling elite. Various expenditure categories are decided in order to increase public welfare of both the current and the following generations. The preferences of the whole society for socio-economic development are captured by this component.

The following mathematical methodology is borrowed from Fardmanesh and Habibi (1997), which is the starting point of this work. In order to simplify the mathematical derivation we assume that both  $W_a$  and  $W_r$  have Cobb-Douglas functional forms, and in order to ease the mathematical derivation, we take only three expenditure categories.

$$\ln(W_r) = \gamma_1 \ln(G_1) + \gamma_2 \ln(G_2) + \gamma_3 \ln(G_3) \quad (2.1)$$

$$\ln(W_a) = \lambda_1 \ln(G_1) + \lambda_2 \ln(G_2) + \lambda_3 \ln(G_3) \quad (2.2)$$

If we substitute (2.1) and (2.2) into the equation (1), we get:

$$\ln W = \alpha \{ \gamma_1 \ln(G_1) + \gamma_2 \ln(G_2) + \gamma_3 \ln(G_3) \} + \beta \{ \lambda_1 \ln(G_1) + \lambda_2 \ln(G_2) + \lambda_3 \ln(G_3) \} \quad (3)$$

The ruling elite maximizes  $\ln W$  subject to total budget constraint  $\sum G_i = G$ . If we rewrite the ruling elite's maximization problem:

$$\ln W = (\alpha\gamma_1 + \beta\lambda_1) \ln(G_1) + (\alpha\gamma_2 + \beta\lambda_2) \ln(G_2) + (\alpha\gamma_3 + \beta\lambda_3) \ln(G_3)$$

subject to  $G_1 + G_2 + G_3 = G$  (4)

The first order conditions are:

$$(\alpha\gamma_i + \beta\lambda_i) / G_i = h, \quad i=1,2,3 \quad \text{where } h \text{ is Lagrange Multiplier.}$$

$$G_1 + G_2 + G_3 = G.$$

If we solve for  $G_i$  we get the following formula:

$$G_i = \{ (\alpha\gamma_i + \beta\lambda_i) / \sum (\alpha\gamma_i + \beta\lambda_i) \} G \quad (5)$$

Equation 5 is a demand function for each expenditure category.

Vulnerability of any expenditure category shows the sensitivity of the expenditure category in any fiscal adjustment program. In the above formula, in order to simplify computations, we assume that  $\sum \gamma_i = 1$  and  $\sum \lambda_i = 1$ , and we can assume that  $\alpha + \beta = 1$ . After these assumptions, the denominator of equation 5 is equal to 1. Thus, we can write equation 5 as follows:

$$G_i = (\alpha\gamma_i + \beta\lambda_i) G \quad (5')$$

If we take a difference function for changes in expenditure categories, we get the following formula:

$$\Delta G_i = (\gamma_i \Delta \alpha + \alpha \Delta \gamma_i + \lambda_i \Delta \beta + \beta \Delta \lambda_i) G + (\alpha \gamma_i + \beta \lambda_i) \Delta G \quad (6)$$

If we divide both sides of this equation by  $\Delta G$  and multiply by  $G / G_i$ , we get the vulnerability equation of each separate category.

$$V_i = (\Delta G_i / \Delta G) \cdot (G / G_i) = (K \cdot G \cdot G / G_i \cdot \Delta G) + (\alpha \gamma_i + \beta \lambda_i) \cdot G / G_i \quad \text{or}$$

$$V_i = (G / G_i) \cdot \{ K / g + (\alpha \gamma_i + \beta \lambda_i) \}$$

where  $g = \Delta G / G$  and  $K = (\gamma_i \Delta \alpha + \alpha \Delta \gamma_i + \lambda_i \Delta \beta + \beta \Delta \lambda_i)$ .

Here, it can be observed which variables affect vulnerability function. In a closed formula, vulnerability depends on  $g$ , percentage change of total budget;  $\alpha$ , the elasticity of the rent-seeking component of the objective function of the ruling elite;  $\beta$ , the elasticity of the altruistic component of the objective function of the ruling elite;  $\gamma_i$ , the share of expenditure category of rent-seeking component;  $\lambda_i$ , the share of expenditure category of altruistic component and their differences  $(\Delta \alpha, \Delta \beta, \Delta \gamma_i, \Delta \lambda_i)$ .  $G / G_i$  is a function of political variables. In this description, only  $g$  is calculated directly. All the other variables are the mathematical solution of the model and these variables cannot be observed directly. Even though we cannot observe these variables directly, an indirect method can be used. Since these variables are affected by political, social and economic conditions, we can, instead, use other directly observable political, economic and demographic variables.

What could be possible political variables that they should be taken into consideration?

The level of democracy affects these variables in several ways. According to the level of democracy, the share of different components of objective function changes. The optimal composition of altruistic and rent-seeking components vary from one society to another in order to maximize the utility function of the ruling elite. In more democratic societies, the ruling elite is responsible to the public and they are more open to inspection. Thus, they have to spend resources very carefully and in a way which increases public welfare. In a nondemocratic society, there is not much inspection, because of nonopenness or because of

the lack of the inspection mechanism. In such a circumstance, politicians are less careful about spending public resources in a proper manner.

Political stability is another political variable which affects the components of the objective function. Political instability may cause the ruling elite to follow more populist policies. In such a conjuncture, the incumbent government is more myopic and is concerned with only the next election instead of the next generation. Education and health are the candidates most vulnerable in expenditure categories for such a government.

The economic ideology of the ruling elite is another political variable that is expected to effect components of the objective function. For example, a socialist party allocates more resources to Social Security and Welfare, and Health expenditures. A right wing party may give more importance to the infrastructure sector. Education can be equally important for both parties.

The administration type of a country plays also an important role in allocating resources in the best possible way. The levels of government (state, federal and local) and the relative size of local government to the state government should be one of the directly observable political variables to be used in the model. If local governments are strong enough, the state government can give less resources for some local services. In that case, central government can deal with nation-wide projects such as defense. Defense expenditure will be higher than Housing and Community Amenities, if the latter is done by local government .

The development level of a country is also an important factor, while determining the internal allocation of government expenditure. The priorities for a developed country are definitely different than a developing country. Per capita income can be an observable variable, which indicates the development level of a country.

If we summarize the short explanations, the following variables will be used in the model in order to find equations of vulnerability of expenditure categories:

- The level of democracy
- The degree of political stability
- Economic ideology of the ruling elite
- Border tension and political relations with neighbors
- The relative size of the central government budget compared to the budget of the state and local governments
- Percentage decline in the real value of total central government expenditures (g)
- Other social, economic and demographic variables that are specific to each expenditure category
- Some macroeconomic indicators such as real GNP and central government budget deficit as a percentage of GDP

After substituting these variables into the vulnerability function, we can start econometric analysis.

### **3.3. Statistical Methods and Data Description:**

In this thesis, in order to find vulnerability equations, ordinary least square method is used. Expenditures are classified in fourteen groups, as mentioned above, based on functional type. Cross-country analysis is used for regression analysis. The data on various functional expenditure categories is taken from the IMF-Government Financial Statistics Yearbook (GFS).

The sample period covers the period between 1980-1989. Our unit of observation in this analysis is country/interval (e.g., Brazil / 1985-1986). Among the member countries of IMF, the countries were selected in which at least a 1.5 % decline in real terms in consecutive years was observed. Small countries, whose population are less than one million, were eliminated. 70 different nations were included in this work. The total number of observations is 140 during this period. Each observation, belonging to a country, is between starting and ending year. The vulnerabilities of the fourteen expenditure sectors are calculated according to the following formula:

$$V_i = ( \Delta G_i / \Delta G ) . ( G / G_i ) = ( \Delta G_i / G_i ) . ( G / \Delta G )$$

As explained above, only real budget cuts are considered. Thus,  $\Delta G$  is always negative. If there is a cut in one expenditure sector, then  $\Delta G_i$  will also be negative. As a result, the vulnerability,  $V_i$ , will be positive if there is a cut in  $i$ th sector when there is a real budget cut and the vulnerability will be negative if there is an increase in  $i$ th sector when there is a real budget cut.

In Table A1, the sample averages of sectoral vulnerabilities can be seen for the data set. According to this table, regarding the whole sample, transportation and communication, housing and community amenities and fuel and energy expenditures are more vulnerable than other sectors. These sectors are also more vulnerable than other sectors regarding the sample in which the reduction in total government expenditure is larger than the median of the whole sample. Public Order and Safety expenditures increased even though there was a real budget cut. Although the sample is too limited to make generalizations, this is the result of our sample. Education is the most protected sector compared to other sectors, regarding

the whole sample and the sample in which the reduction in total government expenditure is larger than the median of the whole sample.

During these regressions, totally 22 independent variables are used. However, six of them are common to all sectors. These six independent variables allow us to test the hypotheses related to vulnerability of public expenditures and political conditions of a country. These variables are:

1. Indicator of democracy and political liberty
2. Index of political stability
3. Economic ideology of the ruling elite
4. The relative size of central government
5. Military relations with the neighbors
6. Percentage decline in total budget

Except for those six variables, other economic, social and demographic characteristics vary from one expenditure sector to another. In the following paragraphs, the description and source of these variables can be found:

### **1. Indicator of Democracy and Political Liberty:**

Gastil's index<sup>4</sup> of political liberty is used in this work. This index gives a score between one and seven to each nation. The score one represents total democracy and the score seven represents dictatorship. For each observation, the previous five years average of Gastil's index of the country is used.

---

<sup>4</sup> Source: Freedom House Publication (New York).



## **2. Index of Political Stability:**

Gupta (1992) suggests an index of political stability in order to measure that variable. In his method, he estimates political instability variable as a function of political events such as political strikes, number of executions, number of coups or riots per year by using a linear regression model. After that estimation, he used this model in order to calculate the index of political instability for the period 1948-1982.

A second political index is provided by Barro (1991). He provides one index for assassinations and one index for revolution and coup. As a political stability, the averages of these two indexes are used.

In the regressions, in some cases Gupta's index gave reasonable results and in some other cases Barro's index gave better results.

## **3. Economic Ideology of the Ruling Elite:**

Economic ideology plays a major role in internal allocation of the budgetary allocation. For this variable, a dummy is used. 0 for left wing regime and center and 1 for right wing regime. Social security and welfare expenditures are more important under a left wing regime compared to right wing. Productive and infrastructure groups may be more important under a right wing regime compared to the left wing. Thus, economic ideology of the ruling elite has a major effect on the vulnerabilities of public expenditure.

## **4. The Relative Size of Central Government:**

This factor is also among the major determinants of allocating resources internally. The effectiveness of local governments and their own budget changes the fiscal decisions of government. In this work, in order to find the relative size of central government, state and

local government budgets are summed up. This value is divided by the central government budget. The values from GFS data are used.

### **5. Military Relations with Neighbors:**

This factor is extremely important for the relative size of defense expenditure. In order to measure this factor we use two indicators. One of them is a dummy, which shows whether a country is at war. For the second variable, three different values are possible: 1, 2 or 3 indicates the degree of tension at the border.

### **6. Percentage Decline in Total Budget :**

This variable is the only one in our theoretical model which is directly observable and in this model, vulnerability is directly related to the percentage decline in total budget. This value is calculated as  $\Delta G / G$ . In order to prove this assertion, Table A1 may be enough. The different values of vulnerabilities for the same public expenditures are due to different levels of percentage decline in total budget.

In addition to these variables, some other technical, economic, social and demographic variables are also used in regressions. The socio-economic of these variables used for each category varies from other categories.. Other independent variables according their categories are as follows:

- **Economic variables:** debt ratio to GDP; total expenditure as a percentage of GDP; overall deficit as a percentage of GDP; domestic debt as a percentage of GDP; foreign debt as a percentage of GDP; real GNP per capita; share of agriculture in total output; share of industry in total output.

- **Demographic variables:** dependency ratio (total percentage of population of children under 14 and of adults over 60); share of labor in industry; urban population as a percentage of total population in the starting year .

### **3.4. Statistical Analysis:**

#### **3.4.1. Descriptive Statistics:**

The descriptive statistics of the data gives some idea for vulnerabilities of some expenditure sectors. The descriptive results can be seen in Tables A1-A6.

In Table A1 the average vulnerability of expenditure sectors can be observed. Fuel and Energy, Transport and Communication, Agriculture and Forestry, Education, Social Security and Welfare sectors are not very sensitive to the real budget decline. In Table A2, the correlation between sectoral vulnerabilities can be seen. The sample characteristics differ. The descriptive result of Fardmanesh and Habibi (1997) results are confirmed in these tables also. They found that there is a positive correlation between the administrative and social sectors. According to our results, there are positive correlation between each subgroup of these main sectors.

Table A4 shows the vulnerabilities under different levels of political liberty. According to the results, housing and community amenities are the more vulnerable sectors. Whereas, health and social security and welfare are the most protected sectors under democratic regimes. Under semidemocratic regimes, the subsectors of the social and administrative sectors are less vulnerable with respect to others. Under nondemocratic regimes, mining,

materials and manufacturing sectors are more vulnerable than others and defense is the most protected sector. The level of vulnerabilities are not monotone except for social sector expenditures. The vulnerability value of social sector expenditures increases from democratic societies to nondemocratic societies. In semidemocratic societies, housing and community amenities, mining, materials and manufacturing and transportation and communication are more protected as compared to these sectors vulnerability in democratic and nondemocratic regimes.

In Table A5 are the average vulnerabilities for different levels of political stability based on Gupta's index. For the whole sample, it is observed that housing and community amenities and mining, materials and manufacturing sectors are more vulnerable under stable regimes. Public Order and Safety is most protected. Social security and welfare expenditures are more protected. Under semi-stable regimes, the housing and community amenities sectors are again the more vulnerable. In addition to public order and safety, education is the most protected sector. Under unstable regimes, productive, infrastructure and miscellaneous sectors become more vulnerable and health and all other administrative and social sectors are protected compared to former sectors.

In Table A6, the vulnerabilities of different continents can be compared for each sector. Even for the same expenditure type, there is high diversity between continents. The largest diversity is observed in public order and safety. However, we can ignore this sector because there are not enough observations. If we omit this sector from consideration, other community and social services, general public services, and mining, materials and manufacturing sectors have very different vulnerabilities across continents.

### **3.4.2. Regression Analysis:**

The results of the estimation equations can be seen in Tables B1-B14. Each table will be explained in a detailed way in following subsections as well. Before discussing the results for each category, there are some general comments which are valid for all of the estimations. There are 140 observations on real budget cuts. However, we do not have 140 observations for each independent variable and sectoral percentage changes. Thus, the number of observations used in the regressions are less than 140. In most of the cases, sample restrictions were imposed because there were several outliers with high absolute values, which could change each coefficient of the estimation equation. These outliers are eliminated. There is statistical limitation of the data and a number of indicators could be used to test different hypotheses. A given variable can explain quite different categories of expenditure. There is an ambiguity, which makes interpretation difficult. Another problem related to the data is the multicollinearity problem. This problem produces a large number of insignificant estimated coefficients. As a result, testing particular hypotheses or estimating the importance of variables is extremely difficult. For detecting heteroskedasticity, Eicher-White test is performed for all equations listed in the tables and heteroskedasticity problem is not detected. With these constraints and limitations, the aim of these regressions was not to maximize  $R^2$ , but to include the main political variables into model. In the rest of this section, the regression analysis of fourteen expenditure categories will be explained.

#### **3.4.2.1. General Public Services:**

General public services includes financial administration and general administration such as planning, statistics, etc. In Table B1, there are 5 regression results related to general public services. Since there was a lot of dispersion and outliers, there were better results by restricting the sample between -1.5 and 2.5.

The variable for the level of democracy in this expenditure type is tested in equation 1 and equation 2 in Table B1. This variable is insignificant and shows erratic behavior. It takes both positive and negative values, it does not keep the sign in two subsequent regressions. Thus, it can be said that the vulnerability of general public services is statistically insignificant to the level of democracy.

Two indices for political stability are tested with different combinations of other variables. This variable is insignificant in both cases. (Regressions 1 to 5 in Table B1).

The coefficient for economic ideology is positive in all regressions and this variable is significant in the last equation. The interpretation of a positive sign is that under a right wing regime, this expenditure is more vulnerable.

The indicator of war or border tension, has a negative sign but this variable is also insignificant. The existence of border tension or war decreases the vulnerability of general public services.

The relative size of state and local government to the central government makes this item more vulnerable. This is very reasonable. If some public services could be done by local governments, then central government could allocate less resources for these services.

The relative size of a budget cut has a negative effect. If the real budget cut increases, the vulnerability of this sector will decrease. There may be other cuts in budget expenditures, however, other sectors will be affected more.

Except for these variables, there are other economic and technical variables which are significant. Average population growth rate is significant and has a positive coefficient. With increasing population, the relative importance of these services may decrease as compared to other sectors. Industrial output share in total output has a negative relation; central government budget deficit has a negative relation and domestic debt has a positive relation. If domestic debt increases, then this sector becomes more vulnerable. In short, it can be said that general public services are related to economic indicators. Vulnerability is not related to political variables because they are minimal public services to be carried out and it is not important by whom they are made.

#### **3.4.2.2. Defense:**

Defense includes all defense expenditures except those for military pension. Again the sample is restricted between -2.5 and 4.5 in order to eliminate outliers. The regression results can be seen in Table B2.

Political liberty variable is insignificant and has both positive and negative signs. By looking at significance levels, the negative sign is dominant. Thus, in nondemocratic societies, vulnerability of defense expenditure decreases. This means that nondemocratic societies spend more on defense.

For political stability variable, Barro's index is used. This variable is significant and has a negative sign. The interpretation is that, in unstable societies, the vulnerability of defense expenditure is smaller, which is as we expected.

The tension at a border has positive and significant values. Here, the index is ordered in the reverse. Thus, this result is reasonable and expected. If the borderline tension increases, then the vulnerability on defense expenditure will be less: More resources will be allocated to the defense side.

Of the economic ideology variable can be said, this variable has never become significant. The economic ideology of the ruling elite is not important, if there are actual cases such as war, political instability and dictatorship. The conditions of a country affect defense expenditure much more than the economic ideology of the ruling elite.

The relative size of local government to central government is insignificant. This result is also very reasonable. Defense is a nationwide issue and local governments cannot change any decision related to defense.

The relative size of a budget cut has a negative coefficient. This means that, if there is a real decline, vulnerability will increase. The defense expenditure is cut at the same proportion as the total budget deficit.

There are also other economic and demographic variables. These are: the share of industry in total output, this variable is significant and has a negative sign; the share of labor in industry, which is significant, has a negative coefficient; the variable total expenditure as a percentage of GDP is significant and has a negative value. If more resources from GDP are used, then the expenditures for defense increases also. The variable central government



budget deficit is positive but not significant. If government deficit increases then the vulnerability will be more. Real GNP per capita has a positive coefficient. A possible explanation for this is that, in wealthier countries, political stability is achieved and there is less need for military forces.

#### **3.4.2.3. Public Order and Safety:**

Public Order and Safety expenditures include justice and police. There are very limited observations for this sector. There are 44 observations totally and if we eliminate the outliers, there remain 25 observations for each regression and the independent variables are highly correlated, the significance levels of equation 1 in Table B3 are not correct. A similar problem can be observed also in equation 2. In order to solve multicollinearity system, another estimation is done. The equations 3, 4 and 5 are more reliable results.

The variable of political liberty has a negative sign but is not significant. In a dictatorship, more resources should be allocated in order to provide public order. Whereas, under democratic regimes, less resources are allocated for the same purpose.

The variable of political stability has also a negative sign and is not significant as well. The reason stated above is also valid for this variable.

The coefficient of the index for the economic ideology is positive and significant, which is difficult to interpret. However, in this sample there are not enough observations to make reasonable decisions.

The coefficient of border tension is positive and insignificant. If the border tension increases, then resources are used for defense instead of public order and safety, and this expenditure is cut.

The relative size of local government to central government is positive but insignificant. This result is also expected, because provision of public order and safety are among the main duties of the central government.

The real decline in budget cut is positive and significant. If there is a real cut in budget, then the vulnerability will be more for this sector.

Central government budget deficit as a percentage of GDP has a negative sign and it is statistically significant. This shows that, governments finance these expenditures by giving deficits. An increase in deficit and an increase in public order and safety expenditures show a high correlation.

#### **3.4.2.4. Education:**

Education expenditure is among the social sector expenditures. The result of regression analysis can be seen in Table B4. The coefficient political liberty variable has a negative sign. This result does not match what we expected. In nondemocratic societies, education becomes more important and education expenditures are less vulnerable. The coefficient of political stability is also negative and in the last two regressions it becomes significant. In highly unstable societies, more resources are allocated to education. The indicator of war or border tension has a negative coefficient. During war or in such periods, education expenditure becomes less vulnerable. The relative size of local government has a positive coefficient and has a significant effect. This result is expected. If local governments are more developed, they can also start financing education and this procedure causes central government to allocate fewer resources. The relative size of a budget cut, or decline in real total government expenditure, has a significant positive effect on education expenditures. When there is a decline in real government expenditures, then vulnerability will increase.

There are also other significant variables showing the effects of other economic indicators. The share of industry in total output and share of labor in the industrial sector have significant and negative effects. If a country becomes more industrialized, in order to maintain this position, the vulnerability of education should decrease. Education should be more important. The variable of central government budget deficit as a percentage of GDP has a positive effect. If deficit increases, vulnerability will also increase. Real GNP per capita has a negative and significant effect on education. We can say that, if a country gets richer, vulnerability will decrease. Education is very important for developing countries. Domestic debt variable has an effect similar to deficit variable. Another interesting significant variable, here, is share of agricultural output in total output. This variable has a negative sign. Countries, in which agriculture plays an important role, start giving more importance to education in order to develop faster. The variable total expenditure as a percentage of GDP has a negative significant effect. If expenditure share increases, then education will obtain more resources. The variable dependency ratio, which shows the ratio of children under 14 and adults over 60 within the population, has a negative significant effect in the first two equations in Table B4. If there is an increase in population of children under 14, then education should be less vulnerable.

#### **3.4.2.5. Health:**

The health category includes: government expenditure on general administration, regulation, and research for health; on hospitals, medical and dental centers, and clinics; on population control, immunization, and inoculation; and on blood donor services. It also covers reimbursement for services outside hospitals and clinics. The regression results are in Table B5. Again in order to obtain reliable results and in order to eliminate outliers, we

restricted the sample between -1.5 and 2.5. The political liberty has an ambiguous effect on health, it has a negative sign in one regression and a positive sign in another regression, both insignificant. Political stability has positive and significant effects on health expenditure. In highly unstable societies, health expenditure is more vulnerable. The coefficient of the index for economic ideology has a negative and significant effect. Under a conservative party, health expenditure is less vulnerable. The variable indicating war or border tension has a negative and significant effect. Under such conditions, health becomes more important and health expenditures are less vulnerable. The relative size of local government has a positive effect on these expenditures. This variable is significant except for the last equation. Some health services are fulfilled by local governments and municipalities. As their shares increases, it is reasonable to expect that the health expenditures become more vulnerable and central government will allocate fewer resources. If there is a larger decline in real total government expenditures, then social expenditures become more vulnerable, since this variable is positive and significant.

In addition to political variables, there are two more variables which effect health expenditure. Real GNP per capita has a negative and significant effect. In richer or more developed countries, health expenditures are less vulnerable. Deficit variable is also tested. It has a negative and insignificant effect on health expenditures. Regional dummies are also tested but none of them become significant. Although it is expected that the dependency ratio, birth and population growth rates and poor access to clean water would have a significant effect, none of them has a statistically significant influence on the vulnerability of health expenditure.

#### **3.4.2.6. Social Security and Welfare:**

The social security and welfare category includes expenditure on social security (sickness, old age, disability payments, pension and disability plans for government employees, civilian and military). It also includes unemployment, family, maternity, and child allowances, as well as any other public assistance. Welfare services include care of elderly, disabled and mentally impaired, and children. The regression results related to social security and welfare can be seen in Table B6. The political liberty variable has a negative significant effect on the vulnerability of the social sector and welfare. In nondemocratic societies, the vulnerability of the social sector is less. Regarding other political variables, political stability has a similar effect as political liberty. In unstable regimes, vulnerability is less. This can be explained by populist policies. Incumbent government prefers to have more support from the public by transferring more resources to them. The coefficient of the economic ideology variable is positive and significant. A conservative party cuts social welfare expenditure more than a labor party during a budget cut. The war or border tension indicator has a negative and significant effect. During war or if there is a tension with neighbors, social security expenditure becomes less vulnerable. In this case, such a comment may be valid<sup>5</sup>: During the periods of external conflict, governments are also concerned with the possibility of internal unrest and in order to maintain social stability, they preserve social security and welfare expenditure in spite of budgetary pressures.

The relative size of local government again plays an important role in the vulnerability of social security and welfare expenditure. This variable has a positive coefficient and is

---

<sup>5</sup> Fardmanesh and Habibi (1997), page 20

statistically significant. Some services for care of the elderly, disabled, mentally impaired and children can be fulfilled by municipalities and local governments. If these state or local governments are developed enough in order to perform such services, then central government can cut welfare expenditures more during fiscal adjustment programs. The real cuts of budget expenditure have a positive impact on these expenditures but it is insignificant.

Other than those political variables, in the regression table there are economic and demographic variables, which are significant. Share of industrial labor and share of industry in total output are two variables, whose effects are similar to each other. Both have negative and significant effects. In industrialized countries, it is difficult to cut from social security expenditures. In more developed countries, there is more labor force and most of the labor uses social security programs. Thus, in such countries social security expenditure is less vulnerable. Real GNP per capita has significant and negative impact. In richer countries, social security expenditures are less vulnerable. They may consider other expenditure sectors in order to design a fiscal adjustment program. Domestic and foreign debt as a percentage of total expenditure shows positive correlation with social security and welfare expenditures and both debt variables are significant. If debt level increases, foreign or domestic, the vulnerability of this sector will increase as well. The dependency ratio is negatively related to the vulnerability of this sector. If the dependency ratio increases, the vulnerability will decrease. This portion of the population covers both adults over 60, who receive pension and children under 14, who may need extra care for several reasons. Central government budget deficit has a negative significant relation. This relation does not seem

reasonable, however, if the budget deficit is increasing and there is relaxation from budget deficits, governments do not cut social security and welfare expenditures.

#### **3.4.2.7. Housing Community and Amenities:**

The category of housing and community amenities covers the provision of housing and housing payments tied to the income level of the recipient. It also includes rent subsidies, some home purchase subsidies (exclusive of tax expenditures), and any administrative costs. The regression results are in Table B7. For this expenditure category we had to restrict our sample between -5 and 7 in order to capture the highest density of distribution of observations and to eliminate outliers. First, we will analyze the political variables. If we look at the coefficient of political liberty, this variable is positively related to the vulnerability of housing and community amenities. This variable is also statistically significant. Under nondemocratic regimes, the vulnerability of this expenditure category increases. Regarding political instability, higher levels of political instability are associated with a lower degree of vulnerability of housing and community amenities. Again these kind of policies are indicators of populist policies. Economic ideology has an ambiguous effect on vulnerability and, in this regression table, economic ideology is insignificant. The war or border tension indicator has a positive insignificant relation. Since, there were multicollinearity problems, this variable is omitted before doing other regressions. The relative size of local government has a positive effect on the vulnerabilities of this sector. This is an expected result, because local governments are very effective at providing housing, land and financial aid. Thus, if there are strong local governments, then this expenditure can be cut more easily. The relative size of the budget cut shows significant and negative relation with the vulnerability of this expenditure. If there is a real budget cut, then

the vulnerabilities will decrease. There is a relative increase in allocation of resources for housing and community amenities.

Other than political variables, there are other economic and social variables, which effects are significant as regression results. We will discuss whether they also have interpretable meanings. Share of labor in industry and dependency ratio have positive and significant relations with the vulnerability of housing and community amenities. Dependent population do not really need separate housing. If their share increases in population, the vulnerability will increase. The labor working in industry in the private sector can receive support or financial aid from funds which are carried out by the private sector. Real per capita GNP has a positive and significant relation. If society becomes wealthier, vulnerability will increase. People may not need special aid for housing. Central government budget deficit has a positive and significant effect. If budget deficit increases, vulnerability will increase also. The variable showing total expenditure as a percentage of GDP shows a negative and significant relation. If total expenditure increases a percentage of GDP, vulnerability will decrease, which causes an increase in total resources allocated for housing and community amenities. Average population growth rate has a positive and insignificant relation. Since it causes a multicollinearity problem, this variable is also omitted from the equation .

#### **3.4.2.8. Other Community and Social Services:**

In this sector, there are cultural and recreational services. The regression results are in Table B8. The independent variables are in the interval between -5 and 7. The political liberty variable is negatively related to the independent variable and shows statistical insignificance. In nondemocratic societies, the vulnerability of cultural activities are less.



Political stability variable is also similar to political liberty variable. Both political variables are negative and insignificant. Under unstable regimes, vulnerability becomes less. Economic ideology variable is positive and significant variable. Right wing parties cut cultural expenditure more than left wing parties. The war or border tension indicator has a negative insignificant coefficient. This negative value is consistent, because the variable is reverse ordered. If there is a war or danger of war, vulnerability will be higher. The relative size of local government has a positive significant effect on vulnerabilities of cultural activities. This result is also expected and reasonable, since most of the cultural activities are organized locally by state and local governments, unless the organization is nationwide. Thus, the relative budgets of local governments are important factors for central governments in the decision process. If local governments are big enough, vulnerability will be higher. The relative size of budget cuts has an ambiguous effect, in terms of direction, and is statistically insignificant.

Among the nonpolitical variables, total expenditure as a percentage of GDP, and central government deficit as a percentage of GDP, have negative relations with the vulnerability of cultural activities and the former is significant. As total expenditure share increases, then the vulnerability will decrease. If deficit increases, vulnerability will decrease but insignificantly. Both share of agriculture in total output and share of industry in total output have negative relations and are statistically significant. Higher production is associated with lower vulnerability values. Average population growth rate has a positive significant effect on vulnerability. Share of labor in the industrial sector is also positively related but is statistically insignificant.

#### **3.4.2.9. Fuel and Energy:**

In this category, electricity, natural gas, steam, and water, expenditure related to the production and distribution of electricity, natural gas, or steam are included. The mining of natural gas, which is classified under mining, is not included. This category also includes expenditure on the regulation, purification and distribution of clean water for general use but not for irrigation. The regression results can be seen in Table B9. Since, there are characteristics peculiar to countries, the sample is very much dispersed. The sample interval is restricted between -5 and 15.

The coefficient of the political liberty variable has a positive and significant sign. Under dictatorships, this expenditure category is cut more, whereas, under democracy this sector is protected more. In order to test political stability, Gupta's index is used. Political instability is positively correlated and significant. Higher levels of political instability cause higher levels of vulnerability in the fuel and energy sectors. If there is political instability, then politicians should follow populist policies, which are mainly in the social sector. Other sectors can be ignored for a short period of time. Economic ideology is negatively related to the vulnerability of fuel and energy expenditures and this relation is statistically significant. The fuel and energy expenditures are more protected under right wing regimes. The indicator of war (dummy variable) is tested and this variable has a negative and significant effect. In war, these expenditures will be more protected because this category has strategic importance. The relative size of local government is negatively and significantly related to the vulnerability of the fuel and energy sector. The percentage decline in real total government expenditure has a negative and significant effect. During the real budget cuts, these sectors are protected more.

Share of labor in the industrial sector is positively and significantly related to the dependent variable. Total expenditure as a percentage of GDP, overall deficit as a percentage of GDP, domestic debt as a percentage of total expenditure and dependency ratio are positively correlated with the vulnerability of the fuel and energy expenditures.

#### **3.4.2.10. Agriculture and Forestry:**

This expenditure category includes the provision of agricultural services and financial support programs for farm prices and incomes. Forestry and inland and ocean fishing programs, as well as research in all these areas, are also included. In this sample, the dependent variable was very much dispersed, thus the sample interval was between -8 and 10. The territorial and climate differences of countries may be the cause for so much dispersion. The regression equations can be seen in Table B10.

The political liberty variable is negatively correlated and is statistically significant. Higher levels of repression and dictatorship are associated with less vulnerability. This result confirms the findings of the previous results<sup>6</sup>. The productive sectors are more protected under nondemocratic regimes, since there is no need for populist policies and production can be promoted. To test political stability, Gupta's index is used. Political stability has a positive effect but is insignificant. If there is highly unstable government, populist policies may be preferred, and as a result, vulnerability is higher in productive sectors. This result is also consistent with the findings of Fardmanesh and Habibi (1997). The coefficients of the index for economic ideology of the ruling regime show that, under conservative right wing regimes, the productive sector is more protected. (Less vulnerability, negative coefficient). Production is more important for conservatives than

---

<sup>6</sup> See Fardmanesh and Habibi (1997), page 18.

liberals. The indicator of war and border tension has a positive and insignificant effect. If there is such a danger, then production related expenditure is cut. The relative size of the government has a significant positive effect on the vulnerability of agriculture and forestry expenditure. Local funds and financial support programs subsidize into agriculture expenditure and such services are extensively provided by local governments. As a result, in financial adjustment programs, such expenditures are cut more. Thus, the vulnerability is higher. The percentage decline in real total government expenditure (relative size of a budget cut) has a negative impact and is insignificant as well. As the total budget cut increases, vulnerability will decrease.

There are also nonpolitical significant variables. Share of industry in total output and share of labor in industry shows similar behavior. Both are statistically significant and have a negative impact on the vulnerability of agriculture and forestry expenditure. It can be a state policy to support agriculture in order to keep people in rural areas to conduct agricultural production. It also could be that in industrial countries farmers are better organized and have more political power as a pressure group. Thus, these coefficients show that, if industrialization increases, then the vulnerability will be less for agriculture and forestry. There are three more macroeconomic variables. Two of them, overall deficit as a percentage of GDP and domestic debt as a percentage of total expenditure have a negative and significant effect on the vulnerability of this sector. Central government budget deficit as a percentage of GDP is positively correlated with vulnerability but it is not significant.

#### **3.4.2.11. Mining , Materials and Manufacturing:**

The category of mining, materials and manufacturing includes expenditures related to mining, natural resources, manufacturing and nonhousing construction sectors. This

category also includes investment grants to these sectors. The regression results are in Table B11. Since the values for the vulnerability of this sector is distributed on a very large scale, the sample restriction is even very large. The sample is restricted between -10 and 12.5.

Political democracy has an ambiguous effect. This variable takes both a positive and a negative sign in regressions. However, its effect is insignificant in both directions. This finding is different from other productive sector result, agriculture and forestry. The vulnerability of this sector is insensitive to the level of democracy. In order to test political stability, Barro's index is used. All the values are positive and significant. Higher levels of political instability leads to higher vulnerable variables for this sector. The approach of the ruling elite is very different for two productive sectors. Under unstable regimes, politicians cut more of these expenditures. However, this result may be explained as follows: In an unstable environment, politicians are concerned about the policies, whose results can be seen in the short term. Manufacturing and construction projects have results in the long term. Thus, this expenditure category may be the easiest category. The absence of such projects are not understood by the public in the short run. Hence, the politicians may lose votes, due to lack of such projects. The economic ideology variable has a negative and significant coefficient. This variable is consistent with previous findings and with our expectations. Conservative right wing parties give more importance to economic development and, in such an environment, the manufacturing sector is protected more. The variable indicating whether there is a war or a possibility of war has negative sign in regressions. In such a case, this sector is protected more in order to decrease the dependency of foreign goods. The relative size of state and local government has taken both negative and positive signs. The significant coefficient has negative value. This result is also

consistent with the previous work<sup>7</sup>. If there are developed local governments, manufacturing, mining and materials expenditures are more protected. It can be explained, if effective local governments perform other duties in a better way, this will decrease the burden of central government in the social sector and central government can engage in larger projects such as dams and factory constructions. The percentage decline in real total government expenditure has a negative and statistically significant coefficient. Under any real budget cut, this sector is protected. A possible explanation for this is that the projects which are in process cannot be stopped at the beginning of any fiscal adjustment program. The cost of giving up a project may be higher than the cost of continuing the project. In that sense, vulnerability may be very small.

There are also many nonpolitical variables. Also, the effects of these nonpolitical variables will be discussed. Share of labor in industrial sectors, agricultural output as a percentage of total output, industrial output as a percentage of total output, and dependency ratio have negative significant relations. If these variables are high within a country, then it is reasonable to expect that this sector will be less vulnerable. Real per capita GNP has also a negative significant variable. Central government budget deficit as a percentage of GDP and foreign debt as a percentage of total expenditure have a positive impact on vulnerability. The latter is also significant. As the foreign debt increases, the vulnerability will increase. This relation may be due to the dependency of industry upon the import of raw materials or intermediate goods or machines.

---

<sup>7</sup> See Fardmanesh and Habibi (1997), page 21

### **3.4.2.12. Transportation and Communication:**

The share of expenditure on transport and communications is closely related to the demands of an urban population. Also, some new investment in technology makes this expenditure very essential. The regression results can be seen in Table B12. The sample is restricted between -5 and 7 .

The political liberty variable is insignificant in that regression model. Thus, its sign is not important. Here, it is positive for the first three regressions and it is negative for the last two regressions. This expenditure category is insensitive to the level of democracy. The political instability variable has also different signs. It is positive and insignificant for three regressions, it is negative and significant for two regressions. If the political environment is highly unstable, then, the vulnerability will be less. However, it is difficult to say something definitely on this expenditure. Economic ideology variable is negatively correlated to the vulnerability of this sector. Transportation and communication expenditures are protected more under conservative regimes. Border tension variable has a negative and significant impact on vulnerability. The variable used for testing is in the reverse order. Thus, if there is a possibility of war, then vulnerability will increase. The relative size of local government is negatively correlated to the dependent variable and is significant. Again, some local roads can be built by local governments and the degree of financial eligibility helps central government to decide on the vulnerability of this expenditure category. However, vulnerability will be less because of the new technological improvements. The cost of such technological projects are much higher than the budget of a local government. The percentage decline in real total government expenditure has an insignificant effect. Average population growth rate has a negative and significant effect. This result is

reasonable. This expenditure category is highly affected by the urban population<sup>8</sup> and the population growth rate is higher in urban areas. Thus, with increasing population growth, vulnerability will be less. The following macroeconomic variables have positive and significant variables: overall deficit as a percentage of GDP, industrial output as a percentage of total output, domestic debt as a percentage of total expenditure and dependency ratio. With the higher value of any of them, vulnerability will be higher for transportation and communication expenditures. For example, if there is an increase in overall deficit and in domestic debt, then the vulnerability will be higher in order to reduce deficit. If industrial output as a percentage of total output increases, then this means that there is less population in urban areas and the vulnerability will be higher. With a higher dependency ratio, a higher vulnerability will be observed, because of different priorities of this part of the population. Real per capita GNP has a negative significant coefficient. Higher levels of per capita income is associated with lower values of vulnerability. Foreign debt as a percentage of total expenditure is negatively and significantly correlated to the vulnerability of transportation and communication expenditures. Communication technology is usually imported. There may be a relation between foreign debt and vulnerability of this expenditure.

#### **3.4.2.13. Other Economic Affairs and Expenditures:**

Outlays on economic services tend to be largely for investment in most developing countries, though current outlays on operations and maintenance and economic regulatory

---

<sup>8</sup> See Heller and Diamond (1990).



activities may also be important.<sup>9</sup> The results of regressions are in Table B13. The sample of independent variable is restricted to -2.5 and 4.5.

Political democracy variable is positively correlated to the dependent variable. Under dictatorship, vulnerability will be higher. In this model, in order to test political instability, Gupta's index is used. It gave better results than Barro's index. Political instability has a negative and significant effect on the dependent variable. It is again a consistent result with our previous findings. Under unstable environments, investment and maintenance expenditures are cut. Economic ideology has mostly negative effect. The negative sign of this coefficient indicates that under a right wing regime the economic affairs sector is more protected.<sup>10</sup> Border tension variable has a negative and significant effect. This sector is more protected under such a possibility. Of course, the investment area is also important. The relative size of government has a positive significant relation. If the investments and economic regulatory activities are done by local governments, vulnerability will be higher. The percentage decline in real total government expenditure does not give enough evidence to comment on this variable. It is not significant and has an ambiguous effect on the dependent variable.

Other variables are as follows: industrial output as a percentage of total output, overall deficit as a percentage of GDP, and total expenditure as a percentage of GDP. All these variables are negatively related to the independent variable and are significant. If higher values will be observed for any of these variables, then lower values will be observed for the vulnerability of this sector.

---

<sup>9</sup> See Heller and Diamond (1990).

<sup>10</sup> See Fardmanesh and Habibi (1997).

#### **3.4.2.14. Other Expenditures:**

This expenditure category is the second component of the miscellaneous expenditure. The regression results are in Table B14. The sample is restricted between -5 and 7.

Political democracy has a positive and significant impact on the vulnerability of this expenditure category. In a nondemocratic environment, vulnerability will be higher and this sector will be protected less.

For this category, Barro's index is used in order to test political instability. This relation is negative. Under unstable environments, this sector is protected. Economic ideology is negatively related. This negative coefficient indicates that under a right wing regime, this sector is more protected, which measures arbitrariness and lack of discipline in government expenditure<sup>11</sup>.

The war or border tension indicator is tested by using different variables. Country at war variable is a dummy variable showing whether a country is or not at war. Border tension variable can take three different values showing the degree of border tension. The war variable and the border tension variable have positive and significant effects. The vulnerabilities will increase during war or in emergency situations.

The relative size of government is not significant for the regression results. The percentage decline in real total government expenditures positively correlated. In situations, in which there will be a real decline in government expenditures, the vulnerability will be higher.

---

<sup>11</sup> See Fardmanesh and Habibi (1997), page 20

There are also other variables tested in regression models. Agricultural output as a percentage of total output, industrial output as a percentage of total output and real per capita GNP have positive and significant variables. The vulnerability will be high if any of them is higher. Domestic debt as a percentage of total expenditure and average population growth rate are negatively correlated and they are statistically significant. Higher population growth rate is associated with less vulnerability on this expenditure.

## 4. CONCLUSION

In this study, our aim is to investigate whether there is a relation between the political environment of a country and the vulnerability of expenditure programs during periods of budget cuts. The regression analysis is performed by using cross country data.

### **The findings can be summarized as follows:**

1. **Economic ideology** has positive and significant effects on the vulnerability of general public services, public order and safety, social security and welfare, other community and social expenditure sectors. It has negative and significant effects on the vulnerability of health, mining, materials and manufacturing, transportation and communication, fuel and energy, agricultural and forestry, and other expenditures. In other sectors such as defense, education, housing and community amenities and other economic affairs it does not have any significant effect.

2. **Political liberty** variable is also effective for determining the vulnerability of some sectors. If we summarize them, political liberty has positive and significant effects on housing and community amenities, fuel and energy, other economic affairs and other expenditures. It has negative and significant effects on public order and safety, education, social security and welfare, agriculture and forestry, other community and social services. The effect of political liberty is insignificant on mining, materials, and manufacturing, transportation and communication, general public services, defense and health expenditure.

3. **Political instability** has significant effects all the time. It is positively related to fuel and energy, mining, materials and manufacturing, health, agriculture and forestry. In high unstable political environments, these sectors are not protected. All the other sectors are negatively correlated and they are protected.

4. **The relative size of local government** is also an important political factor. This variable is negatively and significantly related to fuel and energy, mining, materials, and manufacturing, transportation and communication and other expenditures. Actually those sectors have a common property. Their related projects should be nationwide. Thus, even during fiscal adjustment programs, they are protected. All the other sectors are positively related and with effective and larger local governments, vulnerabilities will be higher.

5. **The percentage decline in real total government expenditures** is also an important variable to decide the vulnerability of the sectors. It has a negative and significant relation to general public services, fuel and energy, agriculture and forestry and mining, materials and manufacturing expenditures. These sectors are protected more under budget cuts. It has a negative but insignificant effect on the defense, other economic affairs and housing and community amenities. Only two sectors are positively and significantly related. These sectors are health and public order and safety. These sectors are not protected during a budget cut. The other sectors are positively and insignificantly related.

6. **The war indicator or the index of border tension** is also an important factor at determining the vulnerability of expenditure sectors. It is significant all the time.

Except for these variables, there are also some economic and social variables, which are specific to each expenditure sector.

The aim for this study was to analyze the budget cuts systematically and to see any statistical regularity between the vulnerability of each sector and political variables. We arrived at some meaningful and interpretable results. Most of the results are consistent with our expectations. We tried to explain some unusual results. Finally, this study provides a better understanding of budgetary outcome during fiscal adjustment programs.

# **APPENDIX A**

**TABLE A1: Sectoral Vulnerabilities**

<b>(-5,5)<sup>1</sup></b>	<b>Sample A<sup>2</sup></b>	<b>Sample B<sup>3</sup></b>	<b>Sample C<sup>4</sup></b>
General Public Serv.	0.47 (116) <sup>5</sup>	0.37 (70)	0.64 (46)
Defense	0.49 (110)	0.42 (69)	0.61 (41)
Public Order & Safety	-0.13 (33)	-0.69 (21)	0.83 (12)
Education	0.43 (123)	0.45 (76)	0.39 (47)
Health	0.47 (110)	0.28 (65)	0.74 (45)
Social Sec. & Welf.	0.54 (103)	0.54 (64)	0.55 (39)
Housing & Com. A.	1.10 (81)	0.76 (45)	1.53 (36)
Recreation & Culture	0.50 (99)	0.26 (59)	0.86 (46)
Fuel & Energy	1.08 (56)	1.05 (30)	1.11 (26)
Agriculture & Forest.	0.87 (89)	0.85 (48)	0.90 (41)
Min., Manuf. & Cons.	0.95 (66)	1.28 (36)	0.55 (30)
Transport. & Comm.	1.12 (98)	1.01 (56)	1.26 (42)
Other Economic Aff.	0.67 (84)	0.08 (45)	1.34 (39)
Other Expenditures	0.51 (106)	0.35 (65)	0.76 (41)

---

<sup>1</sup>Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup>Sample A contains the whole sample.

<sup>3</sup>Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup>Sample C is a subsample of Sample A for which the reduction in total government is larger than the median value for Sample A.

<sup>5</sup>Number of observations.



**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
GPS <sup>5</sup> & Defense	0.043	0.002	0.173
GPS & Public Order and Safety	0.180	0.245	-0.094
GPS & Education	0.180	0.175	0.244
GPS & Health	0.138	0.244	-0.185
GPS & Social Security - Welfare	-0.100	-0.121	-0.051
GPS & Housing - Comm. Amen.	0.030	-0.041	0.203
GPS & Recreation - Culture	0.071	0.046	0.092
GPS & Fuel - Energy	-0.053	-0.220	0.250
GPS & Agriculture - Forestry	0.155	0.152	0.126
GPS & Mining- Manuf - Const.	-0.036	-0.079	0.115
GPS & Transport - Commun.	-0.053	-0.103	0.152
GPS & Other Econ. Affairs	0.020	-0.083	0.157
GPS & Other Expenditures	-0.095	0.012	-0.383

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

<sup>5</sup> General Public Services.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Defense & Public Order and Safety	0.147	-0.064	0.642
Defense & Education	0.074	0.040	0.310
Defense & Health	0.231	0.237	0.256
Defense & Social Sec. - Welfare	0.044	0.060	-0.030
Defense & Hous. - Comm. Amen.	0.110	0.025	0.357
Defense & Recreation - Culture	0.137	0.099	0.256
Defense & Fuel - Energy	-0.156	-0.109	-0.286
Defense & Agriculture - Forestry	-0.055	-0.039	-0.125
Defense & Mining- Manuf - Const.	-0.002	-0.110	0.115
Defense & Transport - Commun.	0.295	0.335	0.099
Defense & Other Econ. Affairs	0.058	-0.029	0.341
Defense & Other Expenditures	-0.265	-0.248	-0.333

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Public Order and Safety & Education	0.199	0.230	0.141
Public Order and Safety & Health	0.115	-0.073	0.469
Public Order and Safety & Social Security - Welfare	0.221	0.047	0.662
Public Order and Safety & Housing - Comm. Amen.	-0.044	-0.202	0.472
Public Order and Safety & Recreation - Culture	0.366	0.287	0.630
Public Order and Safety & Fuel - Energy	-0.137	-0.302	0.308
Public Order and Safety & Agriculture - Forestry	0.328	0.360	0.282
Public Order and Safety & Mining- Manuf - Const.	0.307	0.312	0.206
Public Order and Safety & Transport - Commun.	0.179	0.413	-0.219
Public Order and Safety & Other Econ. Affairs	0.128	0.211	-0.218
Public Order and Safety & Other Expenditures	-0.294	-0.124	-0.650

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Education & Health	0.399	0.400	0.442
Education & Social Security - Welfare	0.192	0.192	0.229
Education & Housing - Comm. Amen.	-0.131	-0.215	0.114
Education & Recreation - Culture	0.312	0.350	0.157
Education & Fuel - Energy	-0.188	-0.104	-0.412
Education & Agriculture - Forestry	0.291	0.356	0.067
Education & Mining- Manuf - Const.	-0.142	-0.155	-0.257
Education & Transport - Commun.	0.281	0.305	0.175
Education & Other Econ. Affairs	0.048	0.070	0.013
Education & Other Expenditures	-0.391	-0.389	-0.437

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Health & Social Security - Welfare	0.212	0.200	0.255
Health & Housing - Comm. Amen.	-0.231	-0.295	-0.183
Health & Recreation - Culture	0.340	0.315	0.330
Health & Fuel - Energy	0.049	0.120	-0.127
Health & Agriculture - Forestry	0.155	0.195	-0.119
Health & Mining- Manuf - Const.	0.080	0.253	-0.074
Health & Transport - Commun.	-0.003	-0.077	0.252
Health & Other Econ. Affairs	0.134	0.101	0.118
Health & Other Expenditures	-0.366	-0.395	-0.410

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Social Security - Welfare & Housing - Comm. Amen.	0.130	0.070	0.181
Social Security - Welfare & Recreation - Culture	0.058	-0.0002	0.184
Social Security - Welfare & Fuel - Energy	-0.235	-0.186	-0.304
Social Security - Welfare & Agriculture - Forestry	0.171	0.227	-0.034
Social Security - Welfare & Mining- Manuf - Const.	-0.039	-0.142	-0.184
Social Security - Welfare & Transport - Commun.	0.108	0.126	0.058
Social Security - Welfare & Other Econ. Affairs	0.151	0.252	-0.111
Social Security - Welfare & Other Expenditures	-0.135	-0.047	-0.406

  

Housing - Comm. Amen & Recreation - Culture	-0.042	-0.0017	-0.193
Housing - Comm. Amen & Fuel - Energy	-0.041	0.105	-0.241
Housing - Comm. Amen & Agriculture - Forestry	0.123	0.075	0.177
Housing - Comm. Amen & Mining-Manuf.-Construction	0.240	0.229	0.296
Housing - Comm. Amen & Transport - Commun.	0.007	-0.088	0.239
Housing - Comm. Amen & Other Econ. Affairs	0.103	0.075	0.065
Housing - Comm. Amen & Other Expenditures	-0.029	0.055	-0.226

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Recreation - Culture & Fuel - Energy	-0.031	-0.067	0.036
Recreation - Culture & Agriculture - Forestry	0.104	0.058	0.224
Recreation - Culture & Mining- Manuf - Const.	0.062	-0.043	0.265
Recreation - Culture & Transport - Commun.	0.091	0.118	-0.018
Recreation - Culture & Other Econ. Affairs	0.027	-0.062	0.135
Recreation - Culture & Other Expenditure	0.282	-0.180	-0.498

  

Fuel - Energy & Agriculture - Forestry	0.039	-0.034	0.180
Fuel - Energy & Mining- Manuf.- Construction	0.103	0.223	-0.048
Fuel - Energy & Transport - Commun.	-0.004	-0.078	0.283
Fuel - Energy & Other Econ. Affairs	0.109	0.071	0.147
Fuel - Energy & Other Expenditures	0.023	0.028	-0.034

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.

**TABLE A2: Correlation Between Sectoral Vulnerabilities**

$(-5,5)^1$	Sample A <sup>2</sup>	Sample B <sup>3</sup>	Sample C <sup>4</sup>
Agriculture - Forestry & Mining- Manuf - Const.	-0.026	0.030	-0.114
Agriculture - Forestry & Transport - Commun.	0.108	0.109	0.092
Agriculture - Forestry & Other Econ. Affairs	-0.015	-0.099	0.134
Agriculture - Forestry & Other Expenditures	-0.195	-0.215	-0.150
Mining- Manuf.- Construction & Transport - Commun.	-0.081	-0.100	-0.007
Mining- Manuf.- Construction & Other Econ. Affairs	0.171	0.173	0.242
Mining- Manuf.- Construction & Other Expenditures	-0.199	-0.076	-0.331
Transport - Commun. & Other Economic Affairs - Services	0.020	-0.111	0.229
Transport - Commun. & Other Expenditures	-0.346	-0.389	-0.282
Other Econ. Affairs & Other Expenditures	0.166	0.281	0.022

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample A includes the whole sample.

<sup>3</sup> Sample B is a subsample of Sample A for which the reduction in total government expenditure is less than the median value for Sample A.

<sup>4</sup> Sample C is a subsample of Sample A for which the reduction in total government expenditure is larger than the median of Sample A.



**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
GPS <sup>5</sup> & Defense	0.319	0.195	0.242
GPS & Public Order and Safety	0.302	0.574	0.215
GPS & Education	0.337	0.298	0.009
GPS & Health	0.214	0.177	-0.221
GPS & Social Security - Welfare	0.497	0.550	0.284
GPS & Housing - Comm. Amen.	0.203	0.308	-0.326
GPS & Recreation - Culture	0.190	0.176	-0.121
GPS & Fuel - Energy	0.194	-0.056	0.487
GPS & Agriculture - Forestry	0.445	0.464	0.070
GPS & Mining- Manuf - Const.	-0.197	-0.272	-0.361
GPS & Transport - Commun.	0.137	0.178	-0.123
GPS & Other Econ. Affairs	0.067	0.097	0.185
GPS & Other Expenditure	0.268	0.189	0.277

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

<sup>5</sup> General Public Services.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Defense & Public Order and Safety	0.598	0.527	0.650
Defense & Education	0.209	0.066	0.443
Defense & Health	0.341	0.193	0.238
Defense & Social Security - Welfare	0.687	0.690	0.674
Defense & Housing - Comm. Amen.	0.162	0.073	0.334
Defense & Recreation - Culture	0.252	0.217	0.253
Defense & Fuel - Energy	-0.207	0.291	0.164
Defense & Agriculture - Forestry	0.372	0.352	0.020
Defense & Mining- Manuf - Const.	-0.201	-0.472	0.228
Defense & Transport - Commun.	0.323	0.312	-0.154
Defense & Other Econ. Affairs	0.041	0.061	0.130
Defense & Other Expenditures	0.150	0.288	-0.057

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Public Order and Safety & Education	0.821	0.860	0.900
Public Order and Safety & Health	0.095	0.342	0.044
Public Order and Safety & Social Security - Welfare	0.221	0.468	0.215
Public Order and Safety & Housing - Comm. Amen.	-0.016	-0.655	1.000
Public Order and Safety & Recreation - Culture	0.744	0.660	0.949
Public Order and Safety & Fuel - Energy	0.151	-0.009	1.000
Public Order and Safety & Agriculture - Forestry	0.454	0.922	0.070
Public Order and Safety & Mining-Manuf - Const.	0.375	0.081	0.050
Public Order and Safety & Transport - Commun.	0.626	0.673	0.726
Public Order and Safety & Other Econ. Affairs	0.380	0.898	-0.006
Public Order and Safety & Other Expenditures	-0.026	0.125	-0.994

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Education & Health	0.136	-0.028	0.395
Education & Social Security - Welfare	0.143	0.024	0.324
Education & Housing - Comm. Amen.	0.006	-0.102	0.156
Education & Recreation - Culture	0.326	0.390	0.158
Education & Fuel - Energy	-0.226	-0.388	-0.010
Education & Agriculture - Forestry	0.319	0.227	-0.047
Education & Mining- Manuf - Const.	-0.051	-0.135	-0.095
Education & Transport - Commun.	0.238	0.197	0.123
Education & Other Econ. Affairs	0.234	0.523	-0.002
Education & Other Expenditures	0.044	0.166	-0.304

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Health & Social Security - Welfare	0.343	0.292	-0.100
Health & Housing - Comm. Amen.	-0.054	-0.189	0.129
Health & Recreation - Culture	0.035	-0.022	-0.110
Health & Fuel - Energy	-0.012	0.055	-0.200
Health & Agriculture - Forestry	0.275	0.259	-0.009
Health & Mining- Manuf - Const.	-0.094	-0.141	-0.116
Health & Transport - Commun.	0.340	0.240	0.346
Health & Other Econ. Affairs	0.224	0.281	0.296
Health & Other Expenditures	0.060	0.072	-0.228

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Social Security - Welfare & Housing- Comm. Amen.	0.130	-0.148	0.388
Social Security - Welfare & Recreation - Culture	-0.024	0.003	-0.109
Social Security - Welfare & Fuel - Energy	-0.020	0.142	-0.086
Social Security - Welfare & Agriculture - Forestry	0.180	0.102	0.029
Social Security - Welfare & Mining- Manuf - Const.	-0.191	-0.414	0.038
Social Security - Welfare & Transport - Commun.	0.343	0.443	0.179
Social Security - Welfare & Other Econ. Affairs	0.291	0.357	0.234
Social Security - Welfare & Other Expenditures	0.050	0.012	0.200

  

Housing - Comm. Amen & Recreation - Culture	-0.116	-0.027	-0.190
Housing - Comm. Amen & Fuel - Energy	0.017	-0.103	0.206
Housing - Comm. Amen & Agriculture - Forestry	0.021	0.034	-0.061
Housing - Comm. Amen & Mining- Manufacturing- Construction	0.348	0.261	0.419
Housing - Comm. Amen & Transport - Commun.	0.142	-0.054	0.270
Housing - Comm. Amen & Other Econ. Affairs	-0.108	-0.249	-0.002
Housing - Comm. Amen & Other Expenditures	0.049	0.071	-0.185

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Recreation - Culture & Fuel - Energy	0.080	-0.006	0.237
Recreation - Culture & Agriculture - Forestry	0.116	-0.030	0.434
Recreation - Culture & Mining- Manuf - Const.	0.284	-0.468	-0.108
Recreation - Culture & Transport - Commun.	0.019	-0.054	-0.071
Recreation - Culture & Other Econ. Affairs	0.281	0.291	0.319
Recreation - Culture & Other Expenditures	-0.152	-0.011	-0.544
Fuel - Energy & Agriculture - Forestry	0.467	0.379	0.576
Fuel - Energy & Mining- Manuf.- Construction	0.013	-0.194	0.348
Fuel - Energy & Transport - Commun.	0.153	-0.089	0.643
Fuel - Energy & Other Econ. Affairs	-0.163	-0.179	-0.261
Fuel - Energy & Other Expenditures	-0.316	-0.191	-0.474

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.

**TABLE A3: Correlation Between Sectoral Vulnerabilities**

(0,5) <sup>1</sup>	Sample D <sup>2</sup>	Sample E <sup>3</sup>	Sample F <sup>4</sup>
Agriculture - Forestry & Mining- Manuf - Const.	0.003	-0.110	-0.213
Agriculture - Forestry & Transport - Commun.	0.369	0.341	0.417
Agriculture - Forestry & Other Econ. Affairs	0.279	0.286	0.301
Agriculture - Forestry & Other Expenditures	-0.052	0.171	-0.335
Mining- Manuf.- Construction & Transport - Commun.	-0.005	-0.261	0.282
Mining- Manuf.- Construction & Other Econ. Affairs	-0.467	-0.478	-0.535
Mining- Manuf.- Construction & Other Expenditures	-0.246	-0.428	-0.104
Transport - Commun. & Other Economic Affairs - Services	0.199	0.252	0.246
Transport - Commun. & Other Expenditures	-0.070	-0.040	-0.157
Other Econ. Affairs & Other Expenditures	0.043	0.203	-0.166

---

<sup>1</sup> Vulnerabilities values within this range have been used in calculation of the averages.

<sup>2</sup> Sample D includes the whole sample.

<sup>3</sup> Sample E is a subsample of Sample D for which the reduction in total government expenditure is less than the median value for Sample D.

<sup>4</sup> Sample F is a subsample of Sample D for which the reduction in total government expenditure is larger than the median of Sample D.



**TABLE A4: Average Value of Vulnerabilities For Different Levels of Political Democracy**

<b>[-5,5]<sup>1</sup></b>	<b>Democratic</b>	<b>Semidemocratic</b>	<b>Nondemocratic</b>
General Public Serv.	0.11 (21) <sup>2</sup> (2.16) <sup>3</sup>	0.44 (61) (1.57)	0.76 (34) (2.05)
Defense	0.68 (22) (1.38)	0.32 (55) (1.79)	0.66 (33) (1.57)
Public Order & Safety	-1.21 (7) (2.28)	-0.06 (18) (2.07)	0.65 (8) (2.43)
Education	0.42 (23) (1.12)	0.48 (66) (1.83)	0.33 (34) (1.76)
Health	0.12 (20) (1.15)	0.61 (55) (1.54)	0.46 (35) (1.86)
Social Security & Wel.	0.24 (22) (1.08)	0.51 (55) (1.44)	0.87 (26) (1.74)
Housing & Com. A.	1.78 (15) (2.51)	0.71 (43) (2.03)	1.40 (23) (2.17)
Recreation & Culture	0.29 (21) (2.71)	0.37 (51) (2.29)	0.90 (27) (1.74)
Fuel & Energy	1.42 (10) (2.31)	1.07 (27) (2.47)	0.91 (19) (2.73)
Agriculture & Forest.	0.61 (15) (2.53)	0.93 (47) (1.81)	0.92 (27) (1.99)
Min., Manuf. & Cons.	0.71 (9) (2.90)	0.43 (37) (2.02)	2.03 (20) (2.00)
Transport. & Comm.	1.13 (22) (2.02)	0.95 (47) (2.23)	1.38 (29) (2.01)
Other Economic Aff.	0.34 (14) (2.03)	0.41 (47) (2.87)	1.40 (23) (2.09)
Other Expenditures	0.80 (24) (1.22)	0.55 (54) (2.45)	0.18 (28) (2.30)

<sup>1</sup> Vulnerabilities within this range are used in calculation of the averages.

<sup>2</sup> Number of observations.

<sup>3</sup> Standard deviation.

**TABLE A4: Average Value of Vulnerabilities For Different Levels of Political Democracy**

[0,5] <sup>1</sup>	<b>Democratic</b>	<b>Semidemocratic</b>	<b>Nondemocratic</b>
General Public Serv.	1.41 (13) <sup>2</sup> (1.15) <sup>3</sup>	1.30 (40) (0.96)	1.67 (25) (1.30)
Defense	1.27 (16) (1.10)	1.33 (35) (1.17)	1.32 (26) (0.89)
Public Order & Safety	1.08 (14) (0.86)	1.33 (46) (1.25)	2.11 (5) (1.32)
Education	1.08 (14) (0.86)	1.33 (46) (1.25)	1.38 (22) (0.82)
Health	0.89 (11) (0.75)	1.44 (35) (1.22)	1.68 (21) (1.00)
Social Security & Wel.	0.87 (14) (0.73)	1.29 (36) (1.04)	1.62 (19) (1.25)
Housing & Com. A.	3.05 (11) (1.35)	1.59 (33) (1.13)	1.42 (17) (1.38)
Recreation & Culture	1.92 (14) (1.38)	1.99 (30) (1.14)	1.52 (22) (1.13)
Fuel & Energy	2.14 (8) (1.87)	2.30 (19) (1.52)	2.31 (14) (1.22)
Agriculture & Forest.	1.83 (11) (1.37)	1.82 (33) (1.33)	1.92 (19) (1.38)
Min., Manuf. & Cons.	2.49 (6) (1.24)	1.60 (24) (1.07)	2.59 (17) (1.57)
Transport. & Comm.	2.17 (16) (0.92)	2.04 (34) (1.30)	2.12 (24) (1.06)
Other Economic Aff.	1.80 (8) (0.82)	2.58 (27) (1.16)	2.27 (18) (1.32)
Other Expenditures	1.91 (17) (1.33)	2.13 (34) (0.97)	2.04 (14) (1.46)

<sup>1</sup> Vulnerabilities within this range are used in calculation of the averages.

<sup>2</sup> Number of observation.

<sup>3</sup> Standard deviation.

**TABLE A5: Average Value of Vulnerabilities For Different Levels of Political Stability**

<b>(-5,5)<sup>1</sup></b>	<b>Stable</b>	<b>Semistable</b>	<b>Unstable</b>
General Public Serv.	0.31 (25) <sup>2</sup> (2.15) <sup>3</sup>	0.55 (60) (1.76)	0.87 (11) (1.97)
Defense	0.58 (26) (1.94)	0.56 (56) (1.72)	0.12 (7) (0.97)
Public Order & Safety	-0.96 (10) (2.37)	-0.63 (11) (2.23)	0.62 (6) (1.66)
Education	0.98 (25) (1.36)	0.02 (64) (1.90)	0.76 (12) (1.45)
Health	0.53 (20) (1.63)	0.481 (57) (1.75)	-0.01 (12) (1.17)
Social Security & Wel.	0.18 (26) (1.45)	0.56 (52) (1.48)	0.60 (11) (0.77)
Housing & Com. A.	1.32 (16) (1.91)	1.42 (42) (2.06)	0.17 (9) (2.61)
Recreation & Culture	0.54 (21) (2.73)	0.47 (47) (2.33)	0.47 (11) (2.00)
Fuel & Energy	0.70 (10) (2.09)	0.92 (27) (2.53)	0.36 (7) (2.84)
Agriculture & Forest.	0.41 (15) (2.44)	1.16 (46) (1.87)	1.34 (9) (1.81)
Min., Manuf. & Cons.	1.23 (10) (2.24)	0.55 (37) (2.40)	1.04 (8) (1.85)
Transport. & Comm.	0.79 (21) (2.05)	1.26 (49) (2.21)	1.05 (12) (2.33)
Other Economic Aff.	0.16 (19) (2.67)	0.65 (40) (2.67)	1.09 (8) (2.62)
Other Expenditures	0.41 (29) (2.60)	0.29 (47) (2.48)	1.63 (11) (1.61)

<sup>1</sup> Vulnerabilities within this range are used in calculation of the averages.

<sup>2</sup> Number of observations.

<sup>3</sup> Standard deviation.

**TABLE A5: Average Value of Vulnerabilities For Different Levels of Political Stability**

(0,5) <sup>1</sup>	<b>Stable</b>	<b>Semistable</b>	<b>Unstable</b>
General Public Serv.	1.37 (18) <sup>2</sup> (1.03) <sup>3</sup>	1.46 (40) (1.17)	1.56 (9) (1.12)
Defense	1.54 (18) (1.16)	1.39 (40) (1.10)	0.78 (4) (0.52)
Public Order & Safety	1.61 (3) (1.74)	1.42 (5) (1.29)	1.90 (3) (1.40)
Education	1.50 (18) (1.24)	1.22 (38) (1.05)	1.22 (9) (1.35)
Health	1.61 (11) (1.31)	1.49 (36) (1.17)	0.98 (6) (0.72)
Social Security & Wel.	1.15 (15) (1.80)	1.29 (35) (1.18)	0.86 (9) (0.57)
Housing & Com. A.	1.92 (13) (1.55)	2.11 (35) (1.39)	2.07 (5) (0.86)
Recreation & Culture	2.19 (14) (1.41)	1.96 (30) (1.04)	1.65 (7) (1.44)
Fuel & Energy	1.60 (7) (1.62)	2.43 (18) (1.30)	1.49 (5) (1.89)
Agriculture & Forest.	1.83 (10) (1.13)	1.93 (35) (1.37)	1.69 (8) (1.57)
Min., Manuf. & Cons.	2.09 (8) (1.38)	1.96 (24) (1.42)	1.86 (6) (1.16)
Transport. & Comm.	2.00 (14) (1.00)	2.16 (39) (1.23)	2.07 (9) (1.23)
Other Economic Aff.	2.19 (11) (0.94)	2.46 (24) (1.26)	2.76 (5) (1.58)
Other Expenditures	1.93 (19) (1.34)	2.35 (24) (1.19)	2.43 (8) (0.98)

<sup>1</sup> Vulnerabilities within this range are used in calculation of the averages.

<sup>2</sup> Number of observations.

<sup>3</sup> Standard deviation.

**TABLE A6: Average Value of Vulnerabilities on Different Continents**

<b>(-5,5)<sup>1</sup></b>	<b>Latin America</b>	<b>Asia</b>	<b>Africa</b>	<b>Europe</b>
General Public Services	0.58 (32) <sup>2</sup> (1.68) <sup>3</sup>	1.06 (33) (1.76)	0.28 (31) (1.43)	-0.37 (20) (2.39)
Defense	0.18 (30) (1.80)	0.41 (31) (1.52)	0.85 (29) (1.82)	0.57 (20) (1.30)
Public Order and Safety	-0.92 (8) (1.71)	1.21 (10) (2.41)	-0.08 (8) (1.82)	-1.21 (7) (2.28)
Education	0.78 (35) (1.88)	0.42 (37) (1.92)	0.12 (34) (1.43)	0.33 (17) (1.13)
Health	0.40 (30) (1.60)	0.68 (33) (1.87)	0.58 (22) (1.43)	-0.10 (15) (1.12)
Social Security & Welfare	0.45 (32) (1.09)	0.64 (24) (1.22)	1.04 (28) (1.82)	-0.15 (19) (1.48)
Housing and Comm. Amenities	1.20 (23) (2.21)	1.03 (24) (2.10)	0.92 (21) (2.17)	1.35 (13) (2.52)
Recreation and Culture	1.35 (25) (2.13)	0.51 (30) (2.17)	0.21 (28) (1.96)	-0.35 (16) (2.72)
Fuel and Energy	1.12 (16) (2.39)	0.58 (20) (2.76)	1.79 (14) (2.58)	0.97 (6) (1.64)
Agriculture and Forestry	0.80 (27) (2.01)	0.87 (25) (2.18)	1.11 (28) (1.71)	0.34 (9) (2.30)
Mining, Manuf. & Construction	-0.17 (17) (1.83)	1.35 (18) (2.29)	1.18 (23) (2.27)	1.80 (8) (2.28)
Transportation & Communication	1.16 (31) (1.87)	0.99 (29) (2.32)	1.43 (23) (2.12)	0.78 (15) (2.28)
Other Econ. Affairs & Services	0.80 (26) (2.47)	0.70 (21) (2.73)	0.46 (24) (2.85)	0.74 (13) (2.20)
Other Expenditure	0.62 (28) (2.12)	-0.01 (25) (2.52)	0.43 (32) (2.42)	1.09 (21) (2.36)

<sup>1</sup> Vulnerability values within this range have been used in calculations of the averages.

<sup>2</sup> Number of observations.

<sup>3</sup> Standard deviation.

**TABLE A6: Average Value of Vulnerabilities on Different Continents**

(0,5) <sup>1</sup>	Latin America	Asia	Africa	Europe
General Public Services	1.27 (24) <sup>2</sup> (1.09) <sup>3</sup>	1.76 (25) (1.30)	1.21 (19) (0.73)	1.46 (10) (1.21)
Defense	1.15 (20) (1.15)	1.40 (19) (0.79)	1.54 (23) (1.26)	1.08 (15) (1.02)
Public Order and Safety	0.73 (3) (0.60)	2.79 (6) 1.54	1.45 (4) (0.54)	0.76 (3) (0.60)
Education	1.57 (26) (1.27)	1.50 (24) (1.14)	0.86 (22) (0.77)	1.05 (10) (0.77)
Health	1.28 (20) (1.05)	2.11 (17) (1.24)	1.22 (23) (0.97)	0.82 (7) (0.63)
Social Security & Welfare	1.07 (22) (0.51)	1.10 (18) (0.99)	1.94 (19) (1.46)	0.91 (10) (0.79)
Housing and Comm. Amenities	1.99 (18) (1.52)	1.89 (19) (1.25)	2.07 (15) (1.17)	2.72 (9) (1.52)
Recreation and Culture	2.11 (21) (1.16)	1.80 (19) (1.35)	1.54 (17) (0.99)	1.72 (9) (1.32)
Fuel and Energy	2.36 (11) (1.59)	2.29 (13) (1.03)	2.61 (12) (1.63)	1.23 (5) (1.69)
Agriculture and Forestry	1.74 (20) (1.22)	2.16 (16) (1.51)	1.80 (21) (1.39)	1.60 (6) (1.18)
Mining, Manuf. & Construction	1.27 (9) (0.92)	2.06 (15) 1.52	2.33 (16) (1.40)	2.51 (7) (1.14)
Transportation & Communication	1.18 (25) (0.99)	2.20 (21) (14)	2.25 (18) (1.36)	2.12 (10) (1.16)
Other Econ. Affairs & Services	2.22 (17) (1.22)	2.18 (15) 1.31	2.81 (13) (1.14)	2.26 (8) (0.92)
Other Expenditures	1.85 (18) (0.81)	2.22 (12) (1.17)	2.11 (19) (1.22)	2.10 (16) (1.49)

<sup>1</sup> Vulnerability values within this range have been used in calculations of the averages.<sup>2</sup> Number of observations.<sup>3</sup> Standard deviation.

## **APPENDIX B**

**TABLE B1: Correlates of the Vulnerability of General Public Services**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-0.044 (0.042)	-2.270 (0.226)	-2.277 (0.218)	-2.025 (0.258)	-1.708 (0.313)
State and Local Gov. Budget as % of Central Gov. Budget	0.220 (0.776)	0.260 (0.736)	0.277 (0.713)	0.037 (0.959)	-0.183 (0.791)
Economic Ideology	0.298 (0.167)	0.254 (0.262)	0.246 (0.250)	0.332 (0.111)	0.347 (0.079)
Political Democracy	0.035 (0.731)	-0.011 (0.890)			
Political Instability	-0.286 (0.460)			-0.246 (0.456)	-0.348 (0.271)
ACR Index of Instability		0.125 (0.420)	0.125 (0.415)		
Central Gov. Budget Deficit as % of GDP	-0.006 (0.084)	-0.007 (0.045)	-0.007 (0.040)	-0.008 (0.019)	-0.008 (0.013)
Average Population Growth Rate	0.389 (0.034)	0.407 (0.033)	0.396 (0.017)	0.423 (0.014)	0.404 (0.013)
Industrial Output as % of Total Output	-0.044 (0.042)	-0.030 (0.178)	-0.029 (0.174)	-0.034 (0.035)	-0.036 (0.017)
Border Tension in year of Observation	-0.099 (0.481)	-0.154 (0.313)	-0.154 (0.306)	-0.093 (0.492)	-0.049 (0.700)
Domestic Debt as % of Total Expenditure	0.006 (0.022)	0.006 (0.020)	0.006 (0.019)	0.006 (0.020)	0.006 (0.012)
Overall Deficit as % of GDP	0.005 (0.467)				
Constant	0.706 (0.351)	0.417 (0.553)	0.412 (0.552)	0.486 (0.468)	0.560 (0.377)
Adjusted R-squared	0.229	0.223	0.243	0.256	0.321
F- statistic	2.243 (0.034)	2.349 (0.029)	2.678 (0.016)	2.764 (0.014)	3.366 (0.004)
Sample Restrictions on Dependent Variable	(-1.5,2.5)	(-1.5,2.5)	(-1.5,2.5)	(-1.5,2.5)	(-1.5,2.5)
No.of Observations	47	48	48	47	46



**TABLE B2: Correlates of the Vulnerability of Defense Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-1.023 (0.710)	-0.806 (0.733)	-0.847 (0.713)	-0.414 (0.851)	-0.201 (0.929)
State and Local Gov. Budget as % of Central Gov. Budget	0.173 (0.881)				
Economic Ideology	-0.105 (0.750)	0.118 (0.688)	0.109 (0.692)	0.275 (0.311)	0.325 (0.268)
Political Democracy	0.055 (0.969)	-0.011 (0.924)			-0.054 (0.633)
ACR Index of Instability	-0.591 (0.038)	-0.646 (0.008)	-0.641 (0.006)	-0.671 (0.003)	-0.695 (0.003)
Central Gov. Budget Deficit as % GDP	0.005 (0.526)	0.010 (0.179)	0.009 (0.170)	0.009 (0.186)	0.009 (0.167)
Share of Labor in Industrial Sector	-0.029 (0.333)	-0.047 (0.068)	-0.047 (0.066)	-0.042 (0.085)	-0.043 (0.082)
Industrial Output as % of Total Output	-0.102 (0.004)	-0.093 (0.002)	-0.093 (0.002)	-0.094 (0.001)	-0.096 (0.001)
Border Tension in Year of Observation	0.548 (0.040)	0.404 (0.076)	0.401 (0.073)	0.388 (0.070)	0.400 (0.066)
Total Expenditure as a % of GDP	-0.052 (0.024)	-0.063 (0.004)	-0.063 (0.003)	-0.057 (0.005)	-0.058 (0.005)
Real GNP per Capita	0.00016 (0.177)	0.00018 (0.046)	0.00018 (0.025)	0.00014 (0.067)	0.00013 (0.147)
Constant	4.599 (0.000)	4.477 (0.000)	4.441 (0.000)	3.906 (0.000)	4.068 (0.000)
Adjusted R-squared	0.171	0.210	0.225	0.250	0.239
F- statistic	1.922 (0.067)	2.647 (0.011)	2.996 (0.006)	3.265 (0.003)	2.918 (0.006)
Sample Restrictions	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)
No.of Observations	50	63	63	62	62

**TABLE B3: Correlates of the Vulnerability of Public Order and Safety Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	8.703 (0.054)	8.146 (0.170)	12.340 (0.141)	13.456 (0.115)	18.137 (0.057)
State and Local Gov. Budget as % of Central Gov. Budget		0.497 (0.770)			1.788 (0.555)
Economic Ideology	2.561 (0.000)	2.505 (0.000)	2.912 (0.000)	3.033 (0.000)	2.911 (0.002)
Political Democracy	-0.561 (0.000)	-0.593 (0.045)	-0.092 (0.757)	-0.199 (0.534)	-0.303 (0.432)
ACR Index of Instability	-1.179 (0.006)	-1.142 (0.048)	-0.089 (0.856)	-0.419 (0.487)	-0.069 (0.919)
Central Gov. Budget Deficit as % GDP	-0.058 (0.000)	-0.062 (0.001)	-0.034 (0.049)	-0.035 (0.048)	-0.032 (0.093)
Share of Labor in Industrial Sector	-0.088 (0.026)	-0.074 (0.241)	-0.117 (0.119)	-0.134 (0.087)	-0.190 (0.063)
Industrial Output as % of Total Output	0.290 (0.000)	0.306 (0.003)	0.196 (0.117)	0.195 (0.121)	0.204 (0.122)
Border Tension in year of Observation	0.163 (0.715)	0.023 (0.959)		0.621 (0.342)	0.474 (0.519)
Overall Deficit as a % of GDP	-0.324 (0.001)	-0.367 (0.008)	-0.343 (0.025)	-0.318 (0.040)	-0.292 (0.109)
Real GNP per Capita	0.0004 (0.079)	0.0004 (0.052)			
Dependency Ratio (% of population under 14 and over 60 years)	0.211 (0.000)	0.219 (0.001)			
Constant	-26.402 (0.000)	-27.790 (0.000)		-10.167 (0.016)	-9.720 (0.041)
Adjusted R-squared	0.896	0.872	0.537	0.536	0.569
F- statistic	19.730 (0.000)	12.370 (0.000)	4.478 (0.005)	4.079 (0.008)	3.641 (0.010)
Sample Restrictions	(-6,8)	(-6,8)	(-6,8)	(-6,8)	(-6,8)
No. of Observations	25	21	25	25	21

**TABLE B4: Correlates of the Vulnerability of Education Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	2.546 (0.239)	2.898 (0.166)	1.085 (0.608)		-2.021 (0.319)
State and Local Gov. Budget as % of Central Gov. Budget	2.505 (0.0385)	2.548 (0.034)	2.331 (0.062)	2.171 (0.070)	
Economic Ideology	-0.032 (0.893)	-0.043 (0.857)	0.062 (0.801)	0.059 (0.810)	0.142 (0.537)
Political Democracy	-0.120 (0.246)	-0.128 (0.211)	-0.130 (0.228)	-0.124 (0.241)	-0.148 (0.151)
ACR Index of Instability	-0.250 (0.351)	-0.264 (0.321)	-0.535 (0.029)	-0.495 (0.031)	-0.181 (0.345)
Central Gov. Budget Deficit as % GDP	0.008 (0.081)	0.008 (0.074)	0.006 (0.170)	0.006 (0.174)	0.006 (0.214)
Share of Labor in Industrial Sector	-0.079 (0.008)	-0.079 (0.008)	-0.066 (0.027)	-0.064 (0.029)	-0.042 (0.102)
Industrial Output as % of Total Output	-0.119 (0.002)	-0.121 (0.001)	-0.130 (0.001)	-0.124 (0.001)	-0.086 (0.004)
Agricultural Output as a % of Total Output	-0.094 (0.0017)	-0.092 (0.002)	-0.105 (0.000)	-0.101 (0.000)	-0.072 (0.003)
Border Tension in Year of Observation	-0.108 (0.495)		-0.192 (0.233)	-0.206 (0.191)	-0.225 (0.165)
Domestic Debt as a % of Total Expenditure	0.004 (0.220)	0.004 (0.231)	0.005 (0.140)	0.005 (0.142)	0.003 (0.274)
Overall Deficit as a % of GDP	-0.324 (0.001)	-0.367 (0.008)			
Real GNP per Capita	-0.00046 (0.000)	-0.00047 (0.001)	-0.00037 (0.004)	-0.00036 (0.004)	-0.00023 (0.011)
Total Expenditure as a % of GDP	-0.035 (0.083)	-0.035 (0.082)	-0.047 (0.021)	-0.045 (0.022)	-0.040 (0.043)
Dependency Ratio (% of population under 14 and over 60 years)	-0.038 (0.045)	-0.041 (0.024)			
Constant	11.325 (0.000)	11.530 (0.000)	8.908 (0.000)	8.733 (0.000)	6.868 (0.000)
Adjusted R-squared	0.296	0.306	0.234	0.249	0.158
F- statistic	2.531 (0.012)	2.726 (0.008)	2.202 (0.029)	2.408 (0.019)	1.969 (0.048)
Sample Restrictions	(2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)
No. of Observations	52	52	52	52	63

**TABLE B5: Correlates of the Vulnerability of Health Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	3.366 (0.043)	3.189 (0.056)	3.380 (0.046)	3.223 (0.065)	3.656 (0.099)
State and Local Gov. Budget as % of Central Gov. Budget	1.817 (0.041)	1.667 (0.059)	1.680 (0.058)	0.394 (0.603)	0.154 (0.878)
Economic Ideology	-0.392 (0.041)	-0.380 (0.049)	-0.347 (0.079)	-0.473 (0.022)	-0.334 (0.171)
Political Democracy			-0.065 (0.430)	0.039 (0.608)	0.029 (0.770)
Political Instability					0.661 (0.178)
ACR Index of Instability	0.253 (0.068)	0.253 (0.070)	0.230 (0.108)	0.362 (0.012)	
Central Gov. Budget Deficit as % GDP	-0.003 (0.383)	-0.002 (0.586)	-0.002 (0.652)	0.00002 (0.999)	-0.0022 (0.626)
Agricultural Output as a % of Total Output	-0.016 (0.187)				
Border Tension in Year of Observation	-0.477 (0.001)	-0.453 (0.002)	-0.433 (0.003)	-0.441 (0.042)	-0.236 (0.153)
Real GNP per Capita	-0.00021 (0.007)	-0.00015 (0.016)	-0.00018 (0.014)		0.00006 (0.241)
Country at War in Year of Observation					
Constant	1.189 (0.035)	1.362 (0.007)	1.577 (0.006)	0.096 (0.075)	-0.049 (0.948)
Adjusted R-squared	0.340	0.327	0.321	0.230	0.190
F- statistic	4.150 (0.001)	4.402 (0.001)	3.898 (0.002)	3.089 (0.010)	1.143 (0.357)
Sample Restrictions	(-1.5,2.5)	(-1.5,2.5)	(-1.5,2.5)	(-1.5,2.5)	(-1.5,2.5)
No.of Observations	50	50	50	50	48

**TABLE B6: Correlates of the Vulnerability of Social Security and Welfare Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	0.482 (0.799)		3.059 (0.124)	1.162 (0.544)	0.676 (0.742)
State and Local Gov. Budget as % of Central Gov. Budget	2.077 (0.030)	2.044 (0.029)	3.580 (0.000)	3.072 (0.004)	2.126 (0.013)
Economic Ideology	0.757 (0.001)	0.759 (0.008)	0.677 (0.01)	0.693 (0.013)	0.550 (0.036)
Political Democracy	-0.176 (0.097)	-0.170 (0.095)	-0.253 (0.012)	-0.228 (0.030)	-0.063 (0.504)
Political Instability					-0.344 (0.440)
ACR Index of Instability	-0.217 (0.331)	-0.217 (0.323)	-0.304 (0.126)	-0.470 (0.021)	
Central Gov. Budget Deficit as % GDP	-0.013 (0.088)	-0.013 (0.077)	-0.017 (0.016)	-0.019 (0.009)	-0.013 (0.062)
Share of Labor in Industrial Sector	-0.097 (0.001)	-0.097 (0.001)	-0.095 (0.000)	-0.079 (0.023)	-0.099 (0.001)
Industrial Output as % of Total Output	-0.039 (0.097)	-0.038 (0.095)	-0.046 (0.026)	-0.045 (0.041)	-0.020 (0.338)
Foreign Debt as a % of Total Expenditure	0.007 (0.046)	0.007 (0.041)	0.009 (0.010)	0.009 (0.016)	0.006 (0.085)
Border Tension in Year of Observation	-0.375 (0.046)	-0.388 (0.030)	-0.283 (0.091)	-0.351 (0.049)	-0.327 (0.087)
Domestic Debt as a % of Total Expenditure	0.0046 (0.096)	0.0046 (0.090)	0.0054 (0.029)	0.0050 (0.047)	0.001 (0.550)
Overall Deficit as a % of GDP	-0.324 (0.001)	-0.367 (0.008)			
Real GNP per Capita	-0.00046 (0.001)	-0.00045 (0.001)	-0.00061 (0.000)	-0.00047 (0.004)	-0.00034 (0.000)
Dependency Ratio (% of population under 14 and over 60 years)	-0.030 (0.075)	-0.029 (0.066)	-0.035 (0.023)		-0.015 (0.364)
Constant	4.002 (0.021)	3.896 (0.019)	4.480 (0.004)	1.443 (0.059)	2.666 (0.096)
Adjusted R-squared	0.265	0.286	0.381	0.285	0.328
F- statistic	2.185 (0.033)	2.416 (0.020)	2.932 (0.007)	2.352 (0.025)	2.537 (0.016)
Sample Restrictions	(-2,4)	(-2,4)	(-2,4)	(-2,4)	(-2,4)
No. of Observations	47	47	45	45	45

**TABLE B7: Correlates of the Vulnerability of Housing and Community Amenities Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-6.022 (0.201)	-6.023 (0.175)	-2.700 (0.514)	-2.170 (0.587)	-2.493 (0.542)
State and Local Gov. Budget as % of Central Gov. Budget	1.422 (0.415)	1.422 (0.406)			
Economic Ideology	0.210 (0.635)	0.210 (0.629)	-0.323 (0.464)	-0.413 (0.314)	-0.450 (0.282)
Political Democracy	0.560 (0.015)	0.560 (0.012)	0.433 (0.041)	0.442 (0.036)	0.308 (0.114)
Political Instability					
ACR Index of Instability	-1.760 (0.003)	-1.760 (0.003)	-1.208 (0.013)	-1.359 (0.001)	-1.211 (0.003)
Central Gov. Budget Deficit as % GDP	0.044 (0.051)	0.044 (0.045)	0.053 (0.019)	0.057 (0.009)	0.059 (0.008)
Share of Labor in Industrial Sector	0.160 (0.002)	0.160 (0.002)	0.139 (0.001)	0.134 (0.001)	0.149 (0.000)
Average Population Growth Rate	0.723 (0.339)	0.724 (0.317)	0.424 (0.556)		
Foreign Debt as a % of Total Expenditure	-0.020 (0.031)	-0.020 (0.024)	-0.023 (0.011)	-0.024 (0.004)	-0.026 (0.003)
Border Tension in Year of Observation	0.00036 (0.999)				
Total Expenditure as a % of GDP	-0.086 (0.035)	-0.086 (0.029)	-0.084 (0.036)	-0.090 (0.019)	-0.063 (0.008)
Real GNP per Capita	0.00056 (0.046)	0.00056 (0.040)	0.00040 (0.085)	0.00037 (0.101)	
Dependency Ratio (% of population under 14 and over 60 years)	0.129 (0.021)	0.129 (0.019)	0.077 (0.075)	0.092 (0.008)	0.051 (0.068)
Constant	-13.110 (0.008)	-13.11 (0.006)	-6.300 (0.072)	-5.994 (0.081)	-1.963 (0.414)
Adjusted R-squared	0.466	0.482	0.435	0.443	0.420
F- statistic	3.950 (0.001)	4.417 (0.000)	4.707 (0.000)	5.221 (0.000)	5.273 (0.000)
Sample Restrictions	(-5,7)	(-5,7)	(-5,7)	(-5,7)	(-5,7)
No. of Observations	45	45	54	54	54

**TABLE B8: Correlates of the Vulnerability of Other Community and Social Services Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	0.177 (0.966)	0.293 (0.942)	-0.948 (0.812)	3.702 (0.398)	-0.097 (0.982)
State and Local Gov. Budget as % of Central Gov. Budget	4.997 (0.005)	4.989 (0.005)	4.275 (0.021)	3.427 (0.062)	4.992 (0.005)
Economic Ideology	1.441 (0.003)	1.436 (0.003)	1.326 (0.006)	0.939 (0.056)	1.442 (0.003)
Political Democracy	-0.089 (0.678)	-0.092 (0.665)	-0.040 (0.855)	-0.182 (0.433)	-0.081 (0.709)
Political Instability			-1.100 (0.162)		
ACR Index of Instability	-0.448 (0.283)	-0.471 (0.203)		-0.441 (0.265)	-0.438 (0.264)
Central Gov. Budget Deficit as % GDP	-0.006 (0.501)	-0.006 (0.496)	-0.006 (0.414)	-0.004 (0.700)	4.992 (0.005)
Share of Labor in Industrial Sector	0.029 (0.605)	0.027 (0.610)	0.048 (0.432)		0.028 (0.605)
Average Population Growth Rate	2.812 (0.000)	2.786 (0.000)	2.748 (0.000)	1.984 (0.001)	2.844 (0.000)
Border Tension in Year of Observation	-0.045 (0.903)				-0.090 (0.784)
Total Expenditure as a % of GDP	-0.097 (0.013)	-0.098 (0.009)	-0.086 (0.012)	-0.091 (0.018)	-0.098 (0.095)
Industrial Output as a % of Total Output	-0.161 (0.013)	-0.160 (0.012)	-0.125 (0.018)	-0.136 (0.038)	-0.162 (0.012)
Agricultural Output as % of Total Output	-0.127 (0.015)	-0.124 (0.014)	-0.102 (0.041)	-0.100 (0.064)	-0.128 (0.015)
Constant	0.183 (0.952)	0.248 (0.933)	-0.474 (0.858)	2.209 (0.325)	0.265 (0.930)
Adjusted R-squared	0.348	0.366	0.353	0.187	0.349
F- statistic	3.091 (0.005)	3.465 (0.002)	3.285 (0.004)	2.199 (0.037)	3.101 (0.004)
Sample Restrictions	(-5,7)	(-5,7)	(-5,7)	(-5,7)	(-5,7)
No.of Observations	48	48	47	53	48

**TABLE B9: Correlates of the Vulnerability of Fuel and Energy Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-30.801 (0.003)	-30.360 (0.000)	-25.710 (0.002)	-26.880 (0.001)	-28.058 (0.001)
State and Local Gov. Budget as % of Central Gov. Budget	-6.174 (0.082)	-6.300 (0.045)	-8.288 (0.022)	-7.082 (0.037)	-8.182 (0.023)
Economic Ideology	-1.548 (0.077)	-1.430 (0.087)	-1.760 (0.070)	-2.067 (0.027)	-2.290 (0.018)
Political Democracy	0.768 (0.043)	0.0823 (0.017)	0.944 (0.018)	1.289 (0.003)	1.408 (0.002)
Political Instability					
ACR Index of Instability	1.026 (0.220)	0.708 (0.336)	1.825 (0.019)	1.926 (0.009)	2.155 (0.006)
Central Gov. Budget Deficit as % GDP					
Share of Labor in Industrial Sector	0.427 (0.002)	0.435 (0.001)	0.341 (0.009)	0.339 (0.006)	0.346 (0.005)
Border Tension in Year of Observation					
Total Expenditure as a % of GDP	0.311 (0.000)	0.327 (0.000)	0.251 (0.001)	0.277 (0.000)	0.290 (0.000)
Overall Deficit as a % of GDP	0.462 (0.016)	0.519 (0.003)	0.281 (0.008)	0.416 (0.015)	0.478 (0.010)
Domestic Debt as a % of Total Expenditure	0.012 (0.394)	0.015 (0.210)	0.010 (0.449)	0.019 (0.157)	0.0256 (0.090)
Dependency Ratio (% of population under 14 and over 60)	0.147 (0.053)	0.190 (0.007)			
Country at War in Year of Observation	-3.399 (0.026)	-3.149 (0.019)	-2.193 (0.132)	-1.910 (0.157)	-2.327 (0.090)
Constant	-15.169 (0.036)	-19.320 (0.005)	-3.173 (0.331)	-4.420 (0.157)	-6.598 (0.084)
Adjusted R-squared	0.435	0.571	0.409	0.508	0.512
F- statistic	3.310 (0.008)	4.757 (0.001)	3.146 (0.013)	4.100 (0.004)	3.860 (0.005)
Sample Restrictions	(-5,15)	(-5,15)	(-5,15)	(-5,15)	(-5,15)
No. of Observations	34	32	32	31	31



**TABLE B10: Correlates of the Vulnerability of Agriculture and Forestry Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-3.969 (0.480)	-2.990 (0.602)	-3.994 (0.471)	-6.277 (0.216)	-7.600 (0.169)
State and Local Gov. Budget as % of Central Gov. Budget	5.023 (0.039)	3.705 (0.098)	4.974 (0.038)	4.587 (0.034)	3.409 (0.121)
Economic Ideology	-0.542 (0.430)	-1.110 (0.086)	-0.505 (0.451)	-0.938 (0.135)	-1.551 (0.021)
Political Democracy	-0.622 (0.063)	-0.620 (0.012)	-0.620 (0.060)	-0.479 (0.107)	-0.329 (0.193)
Political Instability	0.401 (0.753)		0.454 (0.716)	0.666 (0.555)	
ACR Index of Instability					0.266 (0.555)
Central Gov. Budget Deficit as % GDP	0.009 (0.407)	0.015 (0.182)	0.010 (0.359)	0.007 (0.487)	0.005 (0.629)
Share of Labor in Industrial Sector	-0.208 (0.007)	-0.124 (0.020)	-0.209 (0.006)	-0.122 (0.095)	-0.014 (0.823)
Industrial Output as % of Total Output	-0.107 (0.064)	-0.138 (0.017)	-0.107 (0.061)	-0.088 (0.086)	-0.089 (0.144)
Border Tension in Year of Observation	0.163 (0.715)	0.023 (0.959)			
Overall Deficit as a % of GDP	-0.129 (0.048)	-0.063 (0.298)	-0.128 (0.047)	-0.126 (0.031)	-0.150 (0.085)
Domestic Debt as a % of Total Expenditure	-0.018 (0.058)	-0.011 (0.244)	-0.017 (0.053)	-0.017 (0.030)	-0.017 (0.054)
Constant	10.264 (0.000)	11.097 (0.000)	10.154 (0.000)	9.029 (0.000)	8.643 (0.002)
Adjusted R-squared	0.279	0.271	0.298	0.322	0.215
F- statistic	2.553 (0.018)	2.858 (0.009)	2.868 (0.011)	3.042 (0.008)	2.207 (0.042)
Sample Restrictions	(-8,10)	(-8,10)	(-8,10)	(-8,10)	(-8,10)
No. of Observations	45	51	45	44	45

**TABLE B11: Correlates of the Vulnerability of Mining, Materials and Manufacturing Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-15.037 (0.079)	-14.700 (0.064)	-23.418 (0.015)	-19.265 (0.0308)	-20.325 (0.008)
State and Local Gov. Budget as % of Central Gov. Budget	6.666 (0.155)	5.671 (0..202)	-5.363 (0.173)	-4.713 (0.192)	-5.570 (0.092)
Economic Ideology	-2.322 (0.010)	-2.196 (0.008)	-2.715 (0.006)	-3.281 (0.001)	-2.431 (0.001)
Political Democracy	-0.245 (0.640)	-0.350 (0.473)	0.306 (0.419)	0.157 (0.653)	0.165 (0.599)
Political Instability					
ACR Index of Instability	2.151 (0.008)	1.821 (0.009)	2.035 (0.065)	2.143 (0.002)	1.475 (0.009)
Central Gov. Budget Deficit as % GDP	0.026 (0.116)		0.186 (0.296)	0.018 (0.267)	
Share of Labor in Industrial Sector	-0.231 (0.046)	-0.242 (0.029)			
Border Tension in Year of Observation	-1.217 (0.083)	-1.425 (0.037)	-0.847 (0.236)	-0.576 (0.383)	-0.171 (0.744)
Agricultural Output as a % of Total Output	-0.280 (0.004)	-0.283 (0.002)			
Industrial Output as a % of Total Output	-0.420 (0.005)	-0.424 (0.000)	-0.150 (0.103)	-0.187 (0.031)	-0.163 (0.021)
Foreign Debt as a % of Total Expenditure		0.016 (0.029)			
Real GNP per Capita	-0.0026 (0.000)	-0.0024 (0.000)			
Dependency Ratio (% of population under 14 and over 60 years)	-0.193 (0.016)	-0.184 (0.010)			
Constant	48.31 (0.000)	47.24 (0.000)	12.123 (0.000)	13.718 (0.000)	12.272 (0.000)
Adjusted R-squared	0.540	0.573	0.300	0.387	0.309
F- statistic	5.499 (0.000)	6.265 (0.000)	3.629 (0.003)	4.791 (0.000)	5.033 (0.000)
Sample Restrictions	(-10,12.5)	(-10,12.5)	(-10,12.5)	(-10,12.5)	(-10,12.5)
No. of Observations	47	48	50	49	64

**TABLE B12: Correlates of the Vulnerability of Transportation and Communication Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.		0.789 (0.855)	-0.192 (0.964)	1.516 (0.733)	0.873 (0.848)
State and Local Gov. Budget as % of Central Gov. Budget	-0.986 (0.628)	-1.093 (0.572)	-0.104 (0.957)	-3.123 (0.057)	-2.836 (0.081)
Economic Ideology	-0.514 (0.305)	-0.808 (0.106)	-0.737 (0.131)	-0.953 (0.058)	-1.113 (0.025)
Political Democracy	-0.003 (0.988)	-0.024 (0.907)	-0.129 (0.536)	0.133 (0.442)	0.154 (0.369)
Political Instability					
ACR Index of Instability	-1.648 (0.014)	-1.426 (0.026)	0.224 (0.563)	0.267 (0.439)	0.268 (0.425)
Central Gov. Budget Deficit as % GDP			0.034 (0.068)		
Average Population Growth Rate	-1.504 (0.043)	-1.661 (0.021)			
Border Tension in Year of Observation	-1.055 (0.012)	-0.980 (0.016)	-0.306 (0.407)	-0.354 (0.365)	-0.675 (0.038)
Overall Deficit as a % of GDP	0.281 (0.01)	0.253 (0.003)	0.171 (0.020)	0.119 (0.091)	0.147 (0.030)
Industrial Output as a % of Total Output	0.156 (0.001)	0.169 (0.000)	0.161 (0.000)	0.183 (0.000)	0.167 (0.000)
Foreign Debt as a % of Total Expenditure			-0.020 (0.026)	-0.005 (0.025)	
Domestic Debt as % of Total Expenditure	0.023 (0.002)	0.023 (0.012)	0.0131 (0.056)	0.012 (0.093)	0.012 (0.077)
Real GNP per Capita	0.00008 (0.780)	0.00001 (0.958)	-0.0005 (0.018)		
Dependency Ratio (% of population under 14 and over 60 years)		0.192 (0.013)			
Constant	-12.62 (0.033)	-10.79 (0.056)	2.705 (0.135)		0.172 (0.910)
Adjusted R-squared	0.280	0.308	0.306	0.193	0.208
F- statistic	2.800 (0.009)	2.853 (0.007)	2.796 (0.008)	2.199 (0.038)	2.490 (0.022)
Sample Restrictions	(-5,7)	(-5,7)	(-5,7)	(-5,7)	(-5,7)
No. of Observations	52	51	50	51	52

**TABLE B13: Correlates of the Vulnerability of Other Economic Affairs Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	-4.896 (0.322)	-0.098 (0.631)	-0.465 (0.910)	0.068 (0.984)	-0.579 (0.885)
State and Local Gov. Budget as % of Central Gov. Budget	2.777 (0.068)	2.445 (0.116)	2.218 (0.144)	1.087 (0.390)	
Economic Ideology	-0.069 (0.874)	-0.214 (0.631)	-0.171 (0.698)	0.008 (0.982)	-0.062 (0.887)
Political Democracy	0.156 (0.401)	0.300 (0.090)	0.276 (0.110)	0.268 (0.602)	0.196 (0.268)
Political Instability	-1.616 (0.056)	-1.148 (0.157)	-0.925 (0.224)	-1.524 (0.024)	
ACR Index of Instability					-0.274 (0.421)
Central Gov. Budget Deficit as % GDP	0.019 (0.012)	0.021 (0.006)	0.019 (0.008)	0.018 (0.002)	0.017 (0.023)
Share of Labor in Industrial Sector					
Border Tension in Year of Observation	-0.591 (0.061)	-0.529 (0.102)	-0.597 (0.058)	-0.191 (0.478)	-0.223 (0.531)
Agricultural Output as a % of Total Output					
Industrial Output as a % of Total Output	-0.130 (0.006)	-0.104 (0.018)	-0.102 (0.019)	-0.106 (0.004)	-0.099 (0.028)
Overall Deficit as a % of GDP	-0.173 (0.104)	-0.173 (0.104)			
Total Expenditure as a % of GDP	-0.084 (0.068)	-0.026 (0.370)			
Constant	6.682 (0.006)	4.337 (0.023)	3.505 (0.030)	3.667 (0.007)	2.637 (0.054)
Adjusted R-squared	0.349	0.290	0.295	0.440	0.142
F- statistic	2.609 (0.033)	2.361 (0.050)	2.570 (0.038)	3.755 (0.008)	1.621 (0.176)
Sample Restrictions	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)	(-2.5,4.5)
No. of Observations	31	31	31	29	31

**TABLE B14: Correlates of the Vulnerability of Other Expenditures**

<b>Independent variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
% Decline in Real Total Gov. Exp.	1.995 (0.695)	5.394 (0.303)	2.809 (0.563)	3.307 (0.497)	2.106 (0.674)
State and Local Gov. Budget as % of Central Gov. Budget	-4.704 (0.083)	0.820 (0.688)	2.193 (0.248)	2.277 (0.216)	3.404 (0.082)
Economic Ideology	-1.274 (0.040)	-0.663 (0.271)	-0.438 (0.417)	-0.353 (0.512)	-0.740 (0.185)
Political Democracy	0.413 (0.111)	0.355 (0.130)	0.406 (0.066)	0.391 (0.076)	0.276 (0.285)
Political Instability					0.884 (0.340)
ACR Index of Instability	-0.093 (0.846)	-0.672 (0.124)	-0.641 (0.118)	-0.638 (0.115)	
Central Gov. Budget Deficit as % GDP					
Share of Labor in Industrial Sector	0.087 (0.135)	0.024 (0.676)			
Border Tension in Year of Observation				1.090 (0.011)	0.702 (0.081)
Agricultural Output as a % of Total Output	0.136 (0.027)				
Industrial Output as a % of Total Output	0.144 (0.062)				
Domestic Debt as a % of Total Expenditure	-0.022 (0.005)	-0.013 (0.081)	-0.011 (0.094)	-0.009 (0.160)	-0.006 (0.352)
Real GNP per Capita	0.00079 (0.006)				
Average Population Growth Rate	-1.410 (0.033)	-1.476 (0.014)	-1.215 (0.014)	-1.188 (0.015)	-1.083 (0.027)
Country at War in Year of Observation	3.164 (0.002)	2.566 (0.008)	2.248 (0.014)		
Constant	-3.856 (0.256)	3.075 (0.229)	2.460 (0.169)	2.071 (0.241)	2.250 (0.242)
Adjusted R-squared	0.235	0.123	0.135	0.142	0.120
F- statistic	2.385 (0.019)	1.844 (0.086)	2.131 (0.050)	2.199 (0.043)	1.938 (0.076)
Sample Restrictions	(-5,7)	(-5,7)	(-5,7)	(-5,7)	(-5,7)
No. of Observations	55	55	59	59	56

## References

- Alesina, A. 1990. "A Positive Theory of Fiscal Deficit and Government Debt." *Review of Economic Studies* 57, pp. 403-414.
- Alesina, A., Ozler, S., Roubini, N., and Swagel, P. 1991. "Political Instability and Economic Growth." Cambridge, MA: NBER Inc., and Harvard University.
- Alesina, A. 1994. "Political Models of Macroeconomic Policy and Fiscal Reforms." in Stefan Haggard & Steven B. Webb, ed., *Voting for Reform*. Oxford: Oxford University Press, pp. 37-59.
- Aschauer, D. A. 1989. "Is Public Expenditure Productive?" *Journal of Monetary Economics* 23, pp. 177-200.
- Blejer, M. I. and Khan, M. S. 1984. "Government Policy and Private Investments in Developing Countries." *IMF Staff Papers*, Vol 31, pp. 379-403.
- Blondal, G. 1986. *Fiscal Policy in the Smaller Industrial Countries, 1972-1982*. Washington D.C.: International Monetary Fund.
- Cardoso, F. H., and Falleto, E. 1979. *Dependency and Development in Latin America*. Berkeley and Los Angeles, CA: University of California Press.
- Carlsen, F. 1996. "Political Business Cycles and Government Popularity- Theory and Evidence." unpublished.
- Chu, K. Y., and Hemming, R. 1991. *A Guide for Public Expenditure*. Washington D.C.: International Monetary Fund.
- Crain, W. M., and Oakley, L. K. 1995 "The Politics of Infrastructure." *Journal of Law and Economics*, Vol 38, Iss.1, pp. 1-17.

- Fardmanesh, M. and Habibi, N. 1997. "The Vulnerability of Expenditure Categories During Budget Cuts".
- Fischer, S. 1980. "Dynamic Inconsistency, Cooperation and the Benevolent Disassembling Government." *Journal of Economic Dynamics and Control* 2, pp. 93-107.
- Gastil, R. D. 1985. *Freedom in the World: Political Rights and Civil Liberties, 1984-1985*. West Port, CT: Greenwood Press.
- Glazer, A. 1989. "Politics and the Choice of Durability." *American Economic Review* 79, pp. 1207-1213.
- Goode, R. 1984. *Government Finance in Developing Countries*. Washington, D.C.: The Brookings Institution.
- Greene, W. H. 1993. *Econometric Analysis*. New York: MacMillan Publishing Company.
- Grilli, V., Masciandaro, D., and Tabellini, G. 1991. "Political and Monetary Institutions and Public Finance Policies in the Industrial Democracies." *Economic Policy* 13, pp. 41-89.
- Habibi, N. 1994. "Budgetary Policy and Political Liberty : A Cross-Sectional Analysis." *World Development*, Vol 22, No 4, pp. 579-586.
- Haggard, S., and Kaufman, R. 1989. "The Politics of Stabilization and Structural Adjustment." in Jeffrey Sachs, ed., *Developing Country Debt and Economic Performance: The International Financial System*. Chicago: University of Chicago Press, pp. 235-239.
- Haggard, S., and Kaufman, R. 1989. "Economic Adjustment in New Democracies." in Joan Nelson, ed., *Fragile Coalitions: The Politics of Adjustment*. New Brunswick, N.J.: Transaction Books.
- Heller, P.S., and Diamond, J. 1990. "International Comparisons of Expenditures Revisited: The Developing Countries, 1975-1986." *Occasional Paper*, No 69, Washington: IMF.

- Hicks, N. L. 1991. "Expenditure Reductions in Developing Countries Revisited." *Journal of International Development*, Vol 3.
- International Money Fund. 1989. *Government Finance Statistics Year books*. Washington D.C.: International Monetary Fund.
- Judge, G. G., et al. 1988. *Introduction to the Theory and Practice of Econometrics*. New York: John Wiley & Sons.
- Karen, R. 1986. "The Politics of Economic Stabilization: IMF Standby Programs in Latin America, 1954-1984." *Comparative Politics*.
- Katz, E. and Rosenberg, J. 1989. "Rent-seeking in Budgetary Allocation : Preliminary Results for 20 Countries." *Public Choice*, Vol 60, pp. 133-144.
- Katz, E., Nitzan, E., and Rosenberg, J. 1990. "Rent-seeking for Pure Public Goods." *Public Choice* 65, pp. 49-60.
- Kruger, A. O. 1974. "The Political Economy of the Rent-seeking Society." *American Economic Review* 64, pp. 291-303.
- Kydland, F. E., and Prescott, E. C. 1977. "Rules Rather than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85, pp. 473-491.
- Levitt, M. S. 1987. *New Priorities in Public Spending*. England: Gower Publishing Company Limited.
- Munnell, A. H. 1990. "How Does Public Infrastructure Affect Regional Economic Performance?" *New England Economic Review*, pp. 11-32.
- Munnell, A. H. 1992. "Policy Watch: Infrastructure Investment and Economic Growth." *Journal of Economic Perspectives* 6, pp. 189-198.



- Nelson, J. 1984. "The Politics of Stabilization," in Richard E. Feinberg and Valerina Kallab, ed., *Adjustment Crisis in the Third World*. New Brunswick, NJ: Transaction Books, pp. 99-118.
- Nitzan, S. 1991. "Rent-seeking With Non-identical Rules." *Public Choice* 71, pp. 43-50.
- Nitzan, S. 1991. "Collective Rent-seeking." *Economic Journal* 101, pp. 1522-1534.
- Pastor, M. Jr., Hilt, E. 1993. "Private Investments and Democracy in Latin America." *World Development*, Vol 21, No 4, pp. 489-507.
- Payne, J. L. 1991. *The Culture of Spending*. California: ICS Press.
- Pfeffermann, G. P. 1987. "Public Expenditure in Latin America, Effects on Poverty." *World Bank Discussion Papers*.
- Premchand, A. 1983. *Government Budgeting and Expenditure Controls: Theory and Practice*. Washington, D.C.: International Monetary Fund.
- Rogoff, K. 1990. "Political Budget Cycles." *American Economic Review*, March, pp. 1-16.
- Roubini, N., and Sachs, J. 1989. "Government Spending and Budget Deficits in the Industrialized Countries." *Economic Policy* 8, pp. 99-132.
- Roubini, N., and Sachs, J. 1989. "Political and Economic Determinants of Budget Deficits in the Industrial Democracies." *European Economic Review* 33, pp. 903-933.
- Schneider, F., and Frey, B. S. 1985. "Economic and Political Determinants of Foreign Direct Investment." *World Development*, Vol. 13, No. 2, pp. 161-175.
- Schnytzer, A. 1994. "Change in Budgetary Allocation and International Comparison of the Social Cost of Rent-Seeking: A Critical Note." *Public Choice*, 79, pp. 357-362.
- Sivard, R. L. 1996. "World Military and Social Expenditures." Publications of World Priorities.

- Summers, R. ,and Heston, A. 1991. "The Penn World Table (mark 5) : An Expanded Set of International Comparisons, 1950 - 1988." *The Quarterly Journal of Economics* 106, pp. 357-362.
- Tabellini, G., and Alesina, A. 1990. "Voting on the Budget Deficit." *American Economic Review* 80, pp. 37-49.
- Tait, A. A., and Heller, P. S. 1982. "Internal Comparisons of Government Expenditure." *Occasional Paper*, No 10, Washington, D.C.: International Monetary Fund.
- Tanzi, V. 1986. "The Growth of Public Expenditures in Industrial Countries: An International and Historical Perspective." Washington, D.C.: International Monetary Fund.
- Tanzi, V. 1991. *Public Finance in Developing Countries*. England: Edward Elgar Publishing Limited.
- Taylor, L. 1988. *Varieties of Stabilization Experience*. Oxford: Clarendon Press.
- United Nations. *World Statistics in Brief*. New York: UN.
- United Nations Development Program. *Human Development Report*. New York: UNDP.
- Ursprung, H. W. 1990. "Public Goods, Rent Dissipation, and Candidate Competition." *Economics and Politics* 2, pp. 115-132.
- Usher, D., and Engineer, M. 1987. "The Distribution of Income in a Despotic Society." *Public Choice* 54, pp. 261-276.
- Vorhies, F., and Glahe, F. 1988. "Political Liberties and Social Development: An Empirical Investigation." *Public Choice*, vol 58, pp. 45-47.

- Waterbury, J. 1989. "The Political Management of Economic Adjustment and Reform." in Joan Nelson, ed., *Fragile Coalitions: The Politics of Economic Adjustment*. New Brunswick, NJ: Transaction Books, pp. 39-56.
- Whitehead, L. 1989. "Democratization and Disinflation: A Comparative Approach." in Joan Nelson, ed., *Fragile Coalitions: The Politics of Economic Adjustment*. New Brunswick, NJ: Transaction Books, pp. 79-93.
- Wildavsky, A. 1964. *The Politics of the Budgetary Process*. Boston: Little Brown.
- World Bank. *World Development Report*. New York: Oxford University Press.